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AN APPROACH TO THE PROBLEM OF SCHOOL MEDICAL AND DENTAL SERVICE

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Late statistics show that in the United States there are now in operation 245,941 public schools housing 26,849,639 pupils. In these public schools $8,000,000,000 has been invested, and to maintain this property and support the 1,055,825 teachers and other school personnel an additional $2,000,000,000 is expended each year. Adding the private and parochial school registration figures to the public school figures gives a total of 32,031,549 children attending schools of elementary and secondary level.

In view of the fact that society has at considerable expense thus grouped our 32 million children for purposes of instruction, the question quite naturally arises To what extent are we utilizing the school grouping of these children to improve their health and their hygiene?

To answer this question, one would naturally look first to the legal requirements set up in the various states regarding (1) school medical supervision, (2) health instruction and (3) physical education.

LEGAL REQIREMENTS

J. F. Rogers [1] reported legal requirements for school medical inspection in 1930 as follows:

> In all, thirty-eight states have some kind of a statute or regulation (usually a statute) either permitting or requiring the examination of children for physical (and sometimes mental) defects. . . . Examinations are "required" annually (presumably of all pupils) in twenty states; every two years in two and every three years in one. . . . A physician is specified as examiner in five states, the county health officer in three states, while in twenty the physician is mentioned as one of the examiners. . . . In three states a nurse is apparently the only examiner . . . and in fourteen others she may participate in examinations. Examination by teachers is specified by mandatory laws of seven states though usually for specified conditions. . . . It is stated that the teacher may be one of the examiners in eleven other states. . . .
>
> In three states examinations of children seem to be limited to those of sight and hearing; in one to sight, hearing and breathing; in one to sight, hearing, nose and throat; in one to sight, hearing, breathing and teeth; in two to dental defects; while a more general examination is specified in fifteen.

With regard to health instruction, Rogers [1] summarizes the various state requirements as follows:

> While the requirement of instruction in the effects of alcoholic drinks and of narcotics (tobacco is mentioned in many of these statutes) was the first intent of these laws, it was recognized that such teaching belonged as part and parcel to the larger subjects of physiology and hygiene and these more general branches are required without limitation as to content by forty states.

Concerning state requirements for physical education or big muscle activity programs, W. F. Meredith [2] gives the following summary:

> Thirty-seven states have enacted laws relative to physical education. Of these, thirty-three make health and physical education mandatory in all or part of the schools of their states. In addition to these, two of the eleven states not having laws have established mandatory requirements.

In general, the legal requirements of the various states may be summarized as follows: Every state requires in its schools instruction with regard to the effects of alcohol and narcotics, forty states require the teaching of physiology and hygiene, thirty-three states make physical education mandatory as part of the school program, twenty states require annual physical examination and three require such examination only periodically (every two or three years).

THE LEGALISTIC CONCEPT OF SCHOOL MEDICAL AND DENTAL SERVICE

Underlying these legal requirements is the assumption that each child has outside of his school life (1) parents to advise him and guide him with regard to his health and hygiene, (2) a family physician and a family dentist to provide periodic health servicing and medical and dental treatment and advice as necessary, (3) a health department to protect him as far as community efforts can from the hazards of communicable disease, (4) a home in which to be taken care of in periods of minor illness, and (5) a hospital for bed care in case of major illness. Assuming the existence of these facilities in the home and the community, the responsibility of the school for the health and hygiene of the child is quite definitely limited and restricted in the minds of the legislators who drew the laws summarized in the preceding section. The intent quite definitely is to leave the major responsibility for the health and hygiene of children with the parents and the family physician, the school taking on only such health responsibilities as are almost unavoidable; i. e., examination of eyes and ears to make sure that the child's tools for learning are at least in usable condition, and such communicable disease control measures as are necessary to maintain a respectable average daily attendance and to prevent the school's becoming a "hotbed of infection" in the community. The intent on the health teaching and physical education side of the program is, however, quite definitely to accept the school's responsibility and make provision for meeting it.

1. Report: State-Wide Trends in School Hygiene and Physical Education, Circular 7, United States Department of Interior, Office of Education, Washington, D. C., February 1930, pp. 2-3.

2. Meredith, W. F.: Regulations Concerning the Acceptance of Health and Physical Education for College Entrance Credit, Norwalk, Ohio, Law Abstract Company, 1933, pp. 27-29.

might be properly geared in with the other preventive medical services of our states and communities (i. e., orthopedic services, tuberculosis services, social hygiene services, mental hygiene services, communicable disease services), this plan would almost of necessity provide that a bureau or division of school medical service be set up in each state department of health and that this bureau or division have general charge of the supervision over the school medical service.

Plan 2 would assume that the practitioners of medicine and dentistry will in time adequately provide the annual health examination. It would divide the responsibility for preventive medical services for school children between the practicing physicians and dentists on the one hand and the school on the other hand. This division of services would be worked out as follows:

1. The thoroughgoing annual medical examination and the preventive inoculations to be considered important parts of the family practitioner's "stock in trade" and as such to be frankly left in the general practitioner's hands except as outlined (6 *a* and *b*).

2. The thoroughgoing dental examination and cleansing to be considered important parts of the family dentist's "stock in trade" and as such to be frankly left in the family dentist's hands except as outlined (4 *a* and *b*, 6 *a* and *b*).

3. For each school district there is to be made available each year a school physician whose supervisory duties should be:

(*a*) General supervision over school efforts to control communicable diseases through exclusion of cases and observation of contacts.

(*b*) Prescribing exercises for and maintaining general supervision over those children needing restricted or special corrective exercises (in cooperation with the family physician).

(*c*) Passing on all illness excuses from physical education.

(*d*) Reviewing of health texts submitted for school adoption to determine the scientific accuracy of their facts.

(*e*) Conducting a sanitary survey of the building and grounds at least twice a year.

(*f*) Supervision over though not actual care of injuries to school athletes.

(*g*) Supervision over care of swimming pool.

(*h*) Supervision over effort to notify parents through notes and home visits regarding unremedied physical defects of their children and to acquaint them with all facilities available in the community for the remedying of these defects.

(*i*) Supervision over the responsibility for physical fitness of athletes participating in strenuous sports.

4. For each school district there is to be made available each year a school dentist or dental hygienist whose duties should be:

(*a*) To provide oral inspection of all children at entrance and in grades 3, 5, 7 and 10 (or in some similar sequence).

(*b*) To provide inspection of any children specially referred by teacher or nurse.

5. For each school district there is to be made available each year a school nurse whose duties should be:

(*a*) Aiding the physician in his medical inspections.

(*b*) Conducting limited health inspections.

(*c*) Notification of parents regarding physical defects.

(*d*) Visiting parents to urge corrections.

(*e*) Cooperation with social welfare agencies to obtain correction of defects in indigent families.

(*f*) Provision of nurse's first aid.

(*g*) Home visits in selected cases for checking of illness absences.

(*h*) Sanitary inspection of school plant weekly.

(*i*) Cooperation with public health authorities in obtaining examination of adults in homes of tuberculin-positive children.

6. In the school there is to be provided a limited health inspection service as follows:

(*a*) Health inspection by nurses and teachers annually with reference of culled cases to the school physician or dentist for further study.

(*b*) Medical inspection by school physicians and dentists at entrance and in third, fifth, seventh and tenth grades (or in some similar sequence) with additional special group tests (such as audiometer hearing tests and tuberculin tests) given at strategic intervals only but planned to make a cumulative whole of the child's twelve year school medical record. (See chart.)

PLAN 2 PREFERABLE

Plan 2 is preferable in my opinion because it would leave the annual health examination in the hands of the general practitioners of medicine and dentistry and yet it would effectively utilize the school grouping of children for preventive medical purposes.

In favor of plan 2 also is the fact that it is in substantial agreement with the recommendations of the Subcommittee on Medical Service of the White House Conference on Child Health and Protection [5] and with the recommendations of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.[6] The summarized report of the Subcommittee on Medical Service of the general Committee on the School Child of the White House Conference stated:

> The examination at school cannot be expected to be as thorough as that made by the family physician. Usually the school routine will be a partial examination—a physical inspection from a medical viewpoint. This should be done in a manner that will create a confidence in all concerned and develop a favorable attitude toward an annual examination.

If, however, the assumption is to be made that the practitioners of medicine and dentistry will in time adequately provide the thoroughgoing annual health examination, there should be valid reasons for that assumption. I would advance the following reasons:

1. Since increasing knowledge of disease brings increasing ability to prevent disease, it is only logical to expect that there will be a steadily increasing emphasis on the preventive functions of medical practice. This will very likely mean that periodic health servicing (including medical examining, preventive inoculations, and health-habit inventorying) will gradually replace a great deal of the emergency medical treatment as carried on by the medical profession today.

2. Certain of the medical colleges, as for example Yale, are frankly building their curriculum around the preventive function in the practice of medicine. When we get a new generation of physicians specifically trained to meet their preventive medical responsibilities, the outlook for real health servicing in the hands of the general practitioner will become promising indeed.

3. The lay public is becoming very rapidly aware of the fact that the medical and dental professions could if they would provide a preventive medical and dental service which would lengthen life and avoid a great deal of pain and disability. The public is already demanding this service in increasing numbers. If additional effort to create this demand were made by our insurance companies, by our official and nonofficial public health organizations, and perhaps by our state and local medical societies, this demand could quite possibly be made universal.

HEALTH DEPARTMENT VS. EDUCATION DEPARTMENT LEADERSHIP

In the organization of our public school system today it is generally assumed that whatever activity is to be carried on in our schools must be carried on under the

5. The School Health Program: Report of the Committee on the School Child, T. D. Wood, Chairman, White House Conference on Child Health and Protection, New York, Century Company, 1932.

6. Health Inspection of School Children: Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, Washington, N. E. A., 1933.

direct and undivided authority of properly trained and appointed school superintendents and principals. Since the child's school day contains only a definite and limited number of hours, it is argued that it would make for difficult administration to have two totally independent departments, i. e., health and education, both in full authority to make demands for that same time.

The disadvantages accruing to education department leadership are, however, as follows:

1. Superintendents and principals tend to look to physical education teachers rather than medically trained persons to head up their school health programs (largely because the former are full-time employees and have credits in education theory, administration and supervision which carry more weight with many school administrators than do medical, dental or nursing degrees). This creates a situation which is unacceptable from the medical point of view—physicians working in the schools under directors of physical education who, coming up through the fields of gymnasium instruction or athletic coaching, have no interest in and no knowledge or appreciation of the principles of preventive medicine.

2. State departments of education, instead of turning directly to their state department of health for supervision over their school medical service and thus utilizing a state supervisory staff, ofttimes already in existence for orthopedics, social hygiene, mental hygiene, communicable disease, tuberculosis, and the like, tend to set up a second supervisory staff. This is not only wasteful in its duplication but it is deplorable in that it bars the health department with its more complete organization permanently from a field of service among children grouped for the first time where it could make perhaps its greatest contribution.

If the really important matter is to keep school administrative problems simplified, we must all vote for education department leadership. If, however, the important matter is really to utilize the school grouping to give each child the best society has to offer both as to education and as to preventive medicine, certainly the advocates of health department leadership have a right to be heard.

If plan 1 should be adopted I would not hesitate to state that health department leadership for the school medical and dental service was essential in view of the size of the medical job contemplated. If plan 2 should be adopted I would still be inclined to favor health department leadership, but I would not feel that success for this plan was by any means impossible under education department leadership.

CONCLUSIONS

1. On the principle that "the shoemaker should stick to his last," our legislatures have more or less consistently separated medical functions from educational functions and have made but little if any place for a medical program in our schools.

2. At the other extreme are those who would gladly see our schools taking over the responsibility for the medical and dental care of the school child, examining, diagnosing and correcting defects, just as they have taken over the responsibility for the education of the child.

3. A plan is presented (plan 1) which would definitely allocate to the school but under the state department of health the preventive medical services for children of school age. This could be done at a not prohibitive cost per pupil, but it is open to the serious objection that it would take from the general practice of medicine and dentistry a considerable part of its "stock in trade" and transfer one fifth of the medical and dental professions from general practice to regimentation and bureaucracy.

4. A plan (plan 2) is presented which would eliminate all medical and dental treatment from the schools, develop to the maximum the educational phases of health work, leave the annual medical examination and preventive inoculation in the family practitioner's hands, and set up a system of school medical supervision and limited health inspection.

5. Plan 2, in my opinion, would serve as an effective means of utilizing the school grouping of our children for improving their health and hygiene, supplementing, not substituting, for the work of the general practitioners of medicine, and without inordinately increasing the cost to the community or regimenting any large proportion of the medical profession.

PHENOLPHTHALEIN STUDIES

A THOUSAND DOSES OF PHENOLPHTHALEIN: URINALYSES

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Most textbooks on pharmacology and therapeutics give phenolphthalein a clean "bill of health" as far as its effect on the kidney is concerned. Thus Sollmann [1] states: "The kidneys are not irritated, nor are there any other systemic effects." Bastedo [2] says: "In extensive clinical use of the drug with frequent urine examinations there has been no albuminuria." There are, however, some textbooks on the subject which report that phenolphthalein has produced albuminuria. The literature on the subject, which will be reported on later in this article, is in a similar condition: for, while nearly all authorities on the subject find phenolphthalein harmless to the kidney, there are a few reports extant that would suggest an opposite possibility.

In consideration of the enormous consumption of phenolphthalein by our people, possibly three billion doses a year, the question whether phenolphthalein produces albuminuria or damages the kidney in any way is so important a matter of public hygiene that it seems to deserve a searching investigation. To put this question to a crucial test, the study of a thousand medicinal doses of phenolphthalein was undertaken with special scrutiny of the effect on the urine.

PHENOLPHTHALEIN RING TEST IN URINE

It seemed possible a priori that one might encounter a false albuminuria reaction owing to the fact that acidification precipitates phenolphthalein from its solution in alkaline fluids. Since many of the albumin tests depend on acidification, this possibility had to be ruled out.

From the Laboratory of Pharmacology and Therapeutics, University of Illinois College of Medicine and the Cook County Hospital.

Because of lack of space, this article has been abbreviated here by the omission of tabular matter. The complete article appears in the authors' reprints.

1. Sollmann, Torald: A Manual of Pharmacology, ed. 3, Philadelphia, W. B. Saunders Company, 1926, p. 230.

2. Bastedo, W. A.: Materia Medica, Pharmacology, Therapeutics, Prescription Writing, ed. 2, Philadelphia, W. B. Saunders Company, 1918, p. 134.

Indeed, we find that when we perform Heller's test with an aqueous solution of phenolphthalein sodium we obtain a turbidity in dilutions down to 5:10,000. The turbidity thus produced is not in the form of a distinct ring, as is the case with the albumin precipitate, but rather is dispersed through the upper layer of fluid: for freshly precipitated phenolphthalein is quite readily soluble in strong nitric acid.

Robert's reagent, being more sensitive, gives a turbidity in solutions of phenolphthalein sodium down to 2.5:10,000. The turbidity disappears when the solution of phenolphthalein sodium contains only 1:10,000.

When urine is saturated with crystalline phenolphthalein, no reaction is obtained, even with Robert's test, obviously because the solution is too dilute; for urine of p_H 7.5 does not dissolve more than 1 part per hundred thousand.

On the other hand "colloidal" phenolphthalein,[3] which is much more soluble than the crystalline form, when added to urine to the point of saturation does give a very definite trace of turbidity with Heller's test and a strong ring test with Robert's reagent.

For differentiation between true albuminuria and this ring test due to phenolphthalein, advantage may be taken of the fact that phenolphthalein solution when heated does not become turbid even when acetic acid is added. On cooling, a turbidity may result which disappears again on heating. As, in the presence of albuminuria, heating produces a turbidity that increases on the addition of acetic acid, the differentiation is easy.

Having thus fortified ourselves with the ability of distinguishing between true albuminuria and a possibly false reaction due to the presence of phenolphthalein, we might as well report the fact at this point that in the entire range of our 1,000 observations on urines after medicinal doses of phenolphthalein we did not encounter a single instance of a false albumin test due to phenolphthalein. This is because the total amount of phenolphthalein in the urine, both free and conjugated, never approaches the quantity necessary for the production of the phenolphthalein ring when its solution is layered over an acid reagent.

METHOD OF STUDY

The specimens of urine were obtained from male medical students at the University of Illinois College of Medicine and from male patients at the Cook County Hospital. Specimens from women were largely excluded because of the possibility of confusing contamination of the urine from such sources as postmenstrual discharge.

The following tests were employed as a routine on each of the urine specimens.[4] The standard methods described in textbooks were employed for the various albumin tests and in testing for sugar in the urine. Turbid specimens of urine were filtered until clear.

Determination of Free Phenolphthalein in Urine.—Ten cubic centimeters of urine was treated with 10 cc. of absolute alcohol and 1 cc. of 10 per cent sodium hydroxide. For comparison we used a standard solution in the same quantity of distilled water, alcohol and alkali, to which was added the suitable standard solution of phenolphthalein to the point of color equality. The phenolphthalein standard may be 1 per cent, 0.1 per cent or 0.01 per cent, depending on the quantity of phenolphthalein in the specimen. The original color of the urine was compensated for by a solution of 10 cc. of urine, 10 cc. of alcohol and 1 cc. of water. A comparator block was used for evaluation of the color.

The twenty-four hour specimens of urine that were preserved with xylene were treated differently. Since phenolphthalein is somewhat more soluble in xylene than it is in urine, it was detected, if at all present, by shaking out the xylene with tenth normal sodium hydroxide volumetric solution, the phenolphthalein imparting a pink tint to the sodium hydroxide solution. Free phenolphthalein was not determined quantitatively in such twenty-four hour specimens, as the xylene of the twenty-four hour urine was not all available and the result therefore was expressed as 0, slight trace (sl. tr.) or trace (tr.).

Determination of Conjugated Phenolphthalein in Urine.—Five cubic centimeters of urine and 5 cc. of 10 per cent hydrochloric acid were heated on a water bath for two hours. This was shaken out with 25 cc. of ether in several portions. The combined ether portions were then shaken out with 10 cc. of tenth normal sodium hydroxide volumetric solution. The color produced was matched with that obtained with 10 cc. of tenth normal sodium hydroxide volumetric solution and a standard phenolphthalein solution (containing 0.01 Gm. in 100 cc.) to the point of color equality.

Determination of Acidity by Folin Method.—Twenty-five cubic centimeters of urine was placed in an Erlenmeyer flask, treated with 1 to 2 drops of 0.5 per cent phenolphthalein solution and shaken with 15 to 20 Gm. of potassium oxalate and immediately titrated with tenth normal sodium hydroxide volumetric solution with constant shaking until a pronounced pale rose color appeared. From this we calculated the number of cubic centimeters of tenth normal sodium hydroxide solution required to neutralize the total twenty-four hour quantity of urine and employed this figure in our tabulation.

OBSERVATIONS ON NORMAL INDIVIDUALS

Advantage was taken of the opportunity to secure the cooperation of medical students, men ranging in age from 20 to 26. In each case a preliminary specimen of urine was secured and then the subject was given a capsule containing a medicinal dose of phenolphthalein, with the direction to take it at bedtime and to secure all the urine passed during the succeeding twenty-four hours, to mix the various specimens, to measure the total quantity, and to furnish a sample of the mixed urine for testing. In order to prevent decomposition of the urine, which would interfere with the determination of its acidity, xylene was added to the specimen, and this was taken care of as described.

It would serve no good purpose to burden this report with the results of 650 observations of this kind, which were consistently negative on chemical as well as on microscopic examination of the urinary specimens both before and after the taking of phenolphthalein. An idea of the amount of labor involved in this study might be gathered from the fact that it required more than 10,000 tests of various kinds. In any one individual at least a week was permitted to elapse between succeeding observations. It might perhaps suffice to report (table 1) eight individual cases typical of the entire series. The meaning of the symbols at the head of the columns have been explained in a footnote in table 1.

3. Fantus, Bernard, and Dyniewicz, J. M.: Phenolphthalein Studies: I. Colloidal Phenolphthalein, Am. J. Digest Dis. & Nutrition 3:721-724 (Feb.) 1936.

4. To conserve space, the tables were omitted from the article in this publication. They will be available in the reprints.

In the column headed "dose," the figures refer to fractions of grams and the letters to the variety of phenolphthalein administered:

A = Experiment with white phenolphthalein.
B = Experiment with yellow phenolphthalein.
C = Experiment with colloidal phenolphthalein.

It might possibly be well to explain at this point that by "white phenolphthalein" we mean the crystalline phenolphthalein described in the U. S. Pharmacopeia.

Yellow phenolphthalein is a product developed in the course of manufacture of phenolphthalein consisting of a mixture of this body with about 2 per cent of as yet unidentified colored bodies, some of which are drastically purgative. In the subsequent purification by crystallization from alcohol, these colored bodies remain in solution. Studies are in progress on the nature of these substances.

Colloidal phenolphthalein [3] is produced by precipitating a solution of phenolphthalein sodium by means of carbon dioxide in the presence of a protective colloid such as gelatin. This product is unstable in liquid form, but it may be secured in the form of a scale preparation by drying it in a thin layer and at a low temperature in the presence of enough acid, such as citric acid, to prevent reversion to the colored sodium salt by loss of carbon dioxide. This product is considerably more soluble than the white phenolphthalein, as is shown by the fact that it will dissolve in a solution of sodium bicarbonate (p_H 8.2) in which crystalline phenolphthalein is insoluble.

One may conclude as a result of these 650 observations that in all these individuals no albuminuria resulted from the doses of phenolphthalein given.

CASES OF ALBUMINURIA IN SUPPOSEDLY NORMAL INDIVIDUALS

The exceptions to the proposition just laid down are shown in tables 2, 3 and 4, in which we report all cases of albuminuria discovered in the course of this study on students. They may be divided into three classes:

Class 1. In one case (table 2) albuminuria was present in the morning specimen as well as in the twenty-four hour specimen, before as well as after the taking of the phenolphthalein. This is obviously an individual with a somewhat pathologic kidney, and there is no evidence that the phenolphthalein increased the damage.

Class 2. In two cases (table 3) we found albuminuria in the twenty-four hour specimen, before as well as after the taking of phenolphthalein. As these men had no albuminuria in the morning specimen, we have here evidently cases of "orthostatic albuminuria." It will be noted that the albuminuria was inconstant and that it had no relation to the taking of phenolphthalein.

Class 3. An occasional and very inconstant reaction to Robert's reagent was encountered in five cases (table 4). This was very irregular and generally occurred only once in all the various observations made in a particular individual. The fact that the other protein tests were negative stamps these reactions as due to proteose rather than to protein; in view of its inconstancy, it must be considered an adventitious admixture. It certainly had nothing whatever to do with the taking of the phenolphthalein.

It may be concluded that in not one of these instances could the albuminuria or proteosuria be ascribed to the taking of the phenolphthalein.

HOSPITAL CASES

To determine the reaction of sick individuals and especially of persons somewhat advanced in years, the kidneys of some of whom might presumably be more sensitive to injury, we studied a series of patients in the nose and throat service, including the Head Cancer Clinic at the Cook County Hospital, as well as of some patients in medical wards. We may summarize our observations by saying that in all 150 of these patients who had no albuminuria before the administration of phenolphthalein in doses of from 0.1 to 0.5 Gm. there was not a single case of albuminuria. It required about 4,500 tests to develop this conclusion.

A series of forty-four patients who had albuminuria before the administration of phenolphthalein was also studied, and it was found that in no instance was there any evidence of increase in the albuminuria or microscopic evidence of change in the urinary sediment excepting in one case. In this patient, who was under treatment at the hospital for renal colic and whose urine contained a trace of albumin before the phenolphthalein was given, there appeared blood and albumin in the urine together with the symptoms of renal colic the day after the dose was administered. Whether the taking of the phenolphthalein had anything to do with precipitating the kidney colic is debatable. It is certain that it had nothing to do with the formation of the stone or the appearance of the blood and albumin in the urine. It should be noted here that a case similar to this one has been reported in the literature and uncritically ascribed to a phenolphthalein reaction by Holz,[5] who reports his own case as follows:

> Having taken, in the course of six weeks, seventeen "purgen" tablets with very satisfactory results, I took a half tablet one evening and awoke the next morning with severe pain in the left hypogastric region, which was not relieved by stormy bowel evacuation. Nausea and meteorism developed, accompanied by chills and colicky pains, accompanied by a peculiar burning pain in the left kidney region which, especially on urinating, extended into the external urinary meatus. The urine became red and showed albumin and red blood corpuscles but not casts on microscopic examination. Opium suppositories relieved the pain. There was obstipation for two days followed by an evacuation of gas and bowel movement. The albumin disappeared from the urine within six days.

This attack, which to a clinician is highly suggestive of a typical attack of renal colic, Holz ascribes to "intestinal occlusion due to irritation and inflammation of the colon with spastic contraction as well as left-sided kidney disease due to purgen poisoning," as though one kidney could be singled out for attack by a poison circulating in the blood stream.

Interesting in connection with this study are those cases that presented albuminuria before the taking of phenolphthalein and in which the urinary condition improved after the dose as indicated by the reduction in the amount of albumin in the urine and the disappearance of the albumin reaction in a number of cases. We report these examinations in table 5. From it, it is obvious that there certainly was no kidney injury in any of these cases, and, if the diminution of the albumin or its disappearance is any indication, there might have been an improvement of the condition.

In all these cases there was no evidence of kidney damage or the production of albuminuria due to the administration of phenolphthalein.

5. Holz, B.: Purgen-Vergiftung, Berlin klin. Wchnschr. 42:931 (July 7) 1905.

ELIMINATION OF PHENOLPHTHALEIN IN THE URINE

Free Phenolphthalein.—This was found in only 8.5 per cent of the urines of medical students and in 21.5 per cent of the urines of the Cook County Hospital patients. This is probably due to the following two facts:

1. The larger the dose the more frequently does free phenolphthalein appear in the urine (chart 1). A larger proportion of the Cook County Hospital patients than of the medical students received 0.3 Gm. doses of phenolphthalein.

2. We have proof of the fact that bacterial decomposition of the urine liberates phenolphthalein from its conjugated form. Many of the Cook County Hospital specimens were over twenty-four hours old and without preservative.

Conjugated Phenolphthalein.—In explanation of the figures in the report, it should be pointed out that these express the amount of free phenolphthalein into which the conjugated form is converted by the prolonged heating after addition of acid. The substance or substances with which the phenolphthalein is conjugated are thought to be sulfate and glycuronate.

Conjugated phenolphthalein was found in every urine specimen examined. In other words, one can tell, by the presence or absence of conjugated phenolphthalein in the urine, whether a person has taken phenolphthalein or not.

The quantity of conjugated phenolphthalein when free phenolphthalein was also present was always greater (with a few exceptions) than that of free phenolphthalein. On the theory that phenolphthalein, after absorption from the alimentary tract, is conjugated as it passes through the liver one can explain the presence of conjugated phenolphthalein when there is no free phenolphthalein or the fact that there is

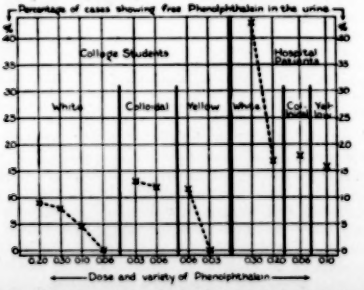

Chart 1.—Percentage of cases showing free phenolphthalein in the urine in relation to the dose. The larger the dose, the more frequently does free phenolphthalein appear in the urine. Each x shows the average of all the observations in the respective zone.

more conjugated than free phenolphthalein in the urine in most cases. The exceptions to the rule are probably due to the decomposition of the conjugated phenolphthalein by bacterial action, as all the fourteen specimens (excepting one) that showed this condition came from the Cook County Hospital.

As shown by chart 2, there is some relation between the amount of conjugated phenolphthalein eliminated and the dose ingested. This chart indicated that, the larger the dose, the greater the average amount of conjugated phenolphthalein eliminated.

A detailed study of the quantitative relations of phenolphthalein elimination in the urine and of some of the conditions that influence it will be the subject of a separate paper.

EVIDENCE FROM THE LITERATURE

Zoltan von Vamossy,[6] who discovered the cathartic action of phenolphthalein in the course of an investigation for the Hungarian government to determine whether this substance was sufficiently harmless to

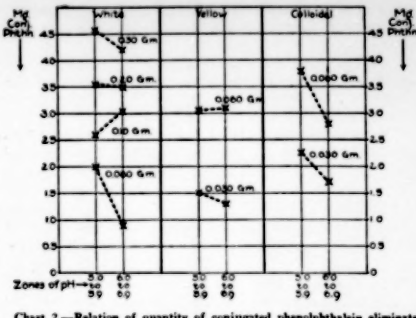

Chart 2.—Relation of quantity of conjugated phenolphthalein eliminated in urine to doses ingested. Each x shows the average of all the observations in the respective zone.

mark adulterated wine with it, concentrated his attention on other possible effects of phenolphthalein on the human body and was unable to discover any. Tunnicliffe,[7] Mendelsohn,[8] Blum,[9] Fleig[10] and many others paid a great deal of attention to the effect of the substance on the kidney, and they arrived at the opinion that it is absolutely harmless not only to the healthy kidney but also to patients with nephritis of various kinds; the contrast was pointed out between it and the unfavorable effect on the kidney of a number of vegetable purgatives, such as colocynth, aloe and anthrapurpurin.

While there is a host of witnesses corroborating the correctness of our observations and the opinion of the critical authors of the textbooks quoted, the question may be raised how it happens that some writers of textbooks report that phenolphthalein has produced albuminuria. A survey of the literature shows that this assertion rests on a few sporadic case reports, most of them dating from the early days of the use of phenolphthalein, when its action was not yet understood and anything that happened after its administration was ascribed to it, and on a solitary and unconfirmed report by Hydrick.[11] Typical of the early case reports are the following:

Blumenthal[12] cites a case of febrile hemolytic jaundice and hemoglobinuria that occurred, accompanied by

6. Vamossy, Zoltan von: Ist "Purgen" ein schädliches Abfürmittel? München. med. Wchnschr. **1**: 1124, 1903; Is Phenolphthalein Harmful? Am. J. Digest. Dis. & Nutrition **2**: 22 (March) 1936.
7. Tunnicliffe, F. W.: Synthetic Purgatives: The Purgative Action of Dihydroxyphtalo-Quenone (Phenolphthalein, Purgen), Brit. M. J. **2**: 1224-1227 (Oct. 18) 1905.
8. Mendelsohn, Martin: Ueber Abführungen und Abführmittel, Deutsche Aerzte-Ztg., Jan. 15, 1905, pp. 28-35.
9. Blum, R.: Purgen, ein neues Abführmittel, Therap. Monatsh. **18**: 468-470, 1904.
10. Fleig, M. C.: Deux purgatifs synthétiques, Arch. internat. de pharmacodyn. et de thérap. **18**: 327-337, 1908.
11. Hydrick, J. L.: Albuminuria Following Ingestion of Phenolphthalein, Proc. Am. Soc. Biol. Chem., J. Biol. Chem. **17**: 36, 1914.
12. Blumenthal, F.: Diagnostische und therapeutische Vorschläge, Med. Klin. **1**: 841 (July 23) 1905.

vomiting, the day after the taking of a 0.1 Gm. "Purgen" tablet. Cylindruria and albuminuria continued for several days and then disappeared. No other report of any such syndrome following the administration of phenolphthalein is available.

Von Jaksch [13] mentions in his book on "Die Vergiftungen" a "verbal" report by a Dr. Wiener of a woman who took large doses of "Purgen" and who suffered from pain in the colon with spastic contraction and had frequent bleeding from the urinary bladder. That something else than phenolphthalein must have caused the "frequent bleeding" seems again obvious, as reports of other such cases are lacking.

Fürbringer [14] reports the case of a woman, aged 59, convalescing from erysipelas, who, after taking 0.6 Gm. of phenolphthalein, developed a drastic diarrhea and whose urine contained albumin and casts. This the author, who had not seen the patient previously, ascribes to the taking of the phenolphthalein, as he does "not know of such late kidney symptoms developing frequently after erysipelas." The urine still contained a trace of albumin in the third week after the taking of the phenolphthalein. That erysipelas is much more likely to be responsible for such continued albuminuria than the phenolphthalein seems obvious in accordance with our present understanding of the two possibilities.

The "law of chance" must cause a dose of medicine that is used with a high degree of frequency to be followed by unexpected symptoms that would also have occurred had the medicine not been taken. When a drug has a real tendency to produce a certain untoward manifestation, the frequent use of the drug will invariably cause recurrences of the phenomenon; and, the more extensively the drug is used, the more common will be the manifestation. This is illustrated by the phenolphthalein eruption, of which, though it is in point of fact comparatively rare, we now have a large number of cases on record.

A paper by J. L. Hydrick was read in 1914 before the American Society of Biological Chemistry which was abstracted in the *Proceedings*. He reports an unbroken series of twenty different individuals in each of whom the subject's urine showed no trace of albumin before the taking of the phenolphthalein, and in each and every one of whom positive tests for albumin were secured in the twenty-four hour specimen of urine ("a twenty-four hour specimen is important"), collected after the administration of 1 or 2 grain (0.065 or 0.13 Gm.) doses of phenolphthalein. This finding of Hydrick's is diametrically opposite to the results of all other students of the question, as well as our own. It has never been confirmed. Hydrick's original paper, which he wrote while he was an undergraduate at Jefferson Medical College, was never published excepting in abstract, because he had written in the report to the society that what he had done was not for publication but to call the attention of the society to the fact that this was a subject which should be investigated thoroughly.

Dr. John L. Hydrick, in a personal communication of Nov. 8, 1936, graciously states: "It is, of course, impossible for me to say what possible errors of technic, or what special circumstances produced the results in my experiments that were interpreted by me, and by several others who saw some of my experiments, as evidence of albuminuria after taking phenolphthalein. . . . It is possible that the phenolphthalein of 1914 was not so pure as that of 1936."

If a preliminary twenty-four hour specimen of urine was not examined, there are at least two pitfalls one might stumble into: 1. In orthostatic albuminuria a morning specimen of urine is free from albumin, while a twenty-four hour specimen contains it. 2. When a twenty-four hour specimen of urine is preserved with toluene or xylene and it is not clarified by filtration, Robert's ring test is positive, giving a false albumin reaction; and addition of alcohol is of no differentiating value, because alcohol by itself produces a ring with Robert's reagent, obviously the result of precipitation of magnesium sulfate.

CONCLUSIONS

1. Medicinal doses of phenolphthalein do not produce albuminuria.

2. While free phenolphthalein is generally absent in the urine of individuals who take a small medicinal dose of phenolphthalein, conjugated phenolphthalein is always present.

3. The larger the dose, the greater the percentage of individuals passing free phenolphthalein in the urine, and the greater the average amount of conjugated phenolphthalein eliminated.

719 South Ashland Boulevard.

13. von Jaksch, R.: Die Vergiftungen, ed. 2, Vienna, Hölder, 1910, p. 345.

14. Fürbringer: Schwere Vergiftung durch Laxativ-Drops (Phenolphthalein), Deutsche med. Wchnschr. 43: 842-844, 1917.

TRANSITORY HYPERGLYCEMIA AND GLYCOSURIA IN ACUTE CORONARY OCCLUSION

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The report of a transitory hyperglycemia and glycosuria occurring in a patient with acute coronary occlusion follows:

M. E., a white woman, aged 52, entered the Cedars of Lebanon medical ward, service of Dr. H. H. Lissner, at 3 a. m., Jan. 16, 1936. She complained of cutting pain in the precordium radiating down the inner aspect of the left arm, nausea and vomiting. The patient had had a known hypertension for several years, according to her attending physician, and during the past year had noted a mild pain of a similar character which had been induced by exertion, excitement or heavy eating and relieved by rest. These pains had been gradually becoming more severe and frequent. On the day previous to admission she had felt somewhat weak and about 10: 30 p. m., while resting, the onset of the pain had occurred very suddenly. She was apparently in shock when seen by her attending physician and was sent immediately to the hospital. The family and past history were essentially irrelevant. On entrance to the hospital the patient, who was somewhat obese, was noted to have an ashy gray pallor, was slightly cyanotic and appeared to be suffering with rather intense pain. The pulse was 90, the temperature 98 F. and the respiratory rate 25. The pupils reacted to light and in accommodation. The heart was enlarged to the anterior axillary line, the apex being in the fifth interspace. The tones were distant and muffled. The rhythm was normal. No friction rub was heard. The blood pressure was 100 systolic, 82 diastolic. The lungs were clear, the abdomen presented no abnormalities, and there was no peripheral edema. An electrocardiogram taken several hours later revealed a simple tachycardia, very severe myocardial damage, disturbance of the interventricular conduction and T wave changes in all four leads diagnostic of acute coronary occlusion. The leukocyte count was 12,000 per cubic millimeter of blood. The blood nonprotein nitrogen was 49 mg. per hundred cubic centimeters and the blood Wassermann reaction was negative. The sedimentation time was decreased from 120 minutes normal to 30 minutes. Urinalysis revealed a specific gravity of 1.037, a

moderately heavy trace of albumin and positive sugar and acetone. The patient was put at extreme rest on a 2,000 calory diet containing 235 Gm. of carbohydrate, 60 Gm. of protein and 90 Gm. of fat and was treated symptomatically. January 17, the fasting blood sugar was 244 mg. per hundred cubic centimeters. The same day the temperature rose to 99.6 F. and two days later to 100.2. A friction rub was never heard but January 21 a "gallop rhythm" was audible, which persisted until February 10. The fasting blood sugar was repeated on the twelfth day after admission and found to be 172 mg. By the thirteenth day after admission the urine was sugar free and negative for acetone, although a moderately heavy trace of albumin still persisted. On the sixteenth day the fasting blood sugar was 200 mg., on the twenty-sixth day 141 mg., on the forty-sixth day 139 mg., on the sixty-eighth day 116 mg., and on the seventy-first day 98 mg. per hundred cubic centimeters of blood. Successive electrocardiograms taken at intervals of several days showed progressive changes toward normal in the T waves. January 27, or on the eleventh day after admission, signs of acute congestive heart failure developed and the patient was placed on digitalis and limited fluids. Her condition steadily improved and she was discharged to her home ambulatory March 29, seventy-three days after admission. At no time during her stay at the hospital or before had the patient had insulin. May 5, 110 days after the onset of the occlusion, the fasting blood sugar taken at home was 86 mg. per hundred cubic centimeters of blood.

The report of this case is undertaken for the purpose of emphasizing one of the frequent clinical features of acute coronary occlusion that is often misinterpreted and mistreated—transitory hyperglycemia and glycosuria. It is misinterpreted because the condition is apt to be confused with true diabetes mellitus and mistreated because insulin is often employed in such doses that the blood sugar is rapidly lowered, thereby leading to serious faults in conduction, namely, extrasystoles, auricular fibrillation and bundle branch block,[1] to acute congestive failure [2] or frequently to death.

In a recent survey of seventy-four cases of acute coronary occlusion seen at this hospital which were proved by clinical and electrocardiographic examinations and in which there had been no previously known diabetes, 20 per cent were found to show hyperglycemia or glycosuria shortly after the onset of the occlusion. In all these cases the blood sugar had returned to normal or the urine was sugar free by the end of the convalescence, with no particular steps directed toward this end. In three of these cases, in which a series of blood sugar determinations had been made, the results were quite similar to those of the case reported. The incidence in this series appears higher than one would expect to find, although it is consistent with Edelmann's [3] series in which he found that eleven of fifty-six cases showed glycosuria with no manifest diabetes. Scherf [4] found an even higher incidence, or six of nine cases. It would therefore be of interest to follow a larger series to determine just how often the condition does occur.

To my knowledge, Levine [5] in 1929 first called attention to this clinical finding, and it has since been referred to by such authors as Cruickshank,[6] Edelmann,[3] Scherf,[4] Gottsegen [7] and Raab and Rabinowitz.[8] It did not become of serious consequence to the patient, however, until the advent of insulin, which agent, although being of life-saving therapeusis to the patient with true diabetes, has undoubtedly meant death to many persons suffering with acute coronary occlusion. Gigon [9] in 1923 first reported the death, after the administration of three doses of insulin, of a diabetic patient suffering with acute congestive heart failure. Nicely and Edmondson [10] concluded after clinical experience with two cases that myocardial incompetence had resulted from undernutrition of the heart muscle due to the lack of a reserve of cardiac and muscle glycogen. Recently it has been shown that there are definite electrocardiographic changes produced by insulin administration, the most consistent of them being a flattening of the T waves, particularly in lead I. Other changes noted with less frequency are delayed auriculoventricular conduction time, depression of the P waves and slurring and prolongation of the QRS complex.[11] These changes have not as yet been adequately explained. Many have thought them due solely to a hypoglycemic state, but von Haynal, Vidovszky and Györgi [11] give strong evidence in favor of a direct action of insulin on the heart muscle. Soskin and his co-workers,[1] on the other hand, have been able to produce practically identical electrocardiographic changes by merely keeping a diabetic patient with cardiovascular disease on a low carbohydrate diet with no insulin and practically no change in the blood sugar level noted. They conclude thereby that the etiologic agent is probably a lack of available carbohydrate for adequate cardiac nutrition.

That a high level of blood sugar is not deleterious but rather advantageous to the cardiac patient, particularly in the anginal type of cardiac distress, has been the clinical experience of many. Büdingen [12] in 1923 and Smith, Gibson and Ross [13] in 1927 have stressed the beneficial effects of the administration of dextrose and high carbohydrate diets in the relief of congestive heart failure.

As to the cause of the rise in the blood sugar, no one can at this time definitely say, although many theories have been advanced.[8] Whether it is a physiologic or a pathologic response has not been determined. The analogous occurrence of hyperglycemia and glycosuria in patients suffering with circulatory shock following cerebral hemorrhage, embolism and thrombosis may aid in the future in solving this problem. What is known, however, is that in a certain percentage of patients suffering with acute coronary occlusion such a phenomenon does occur and that when it is seen one must remember that it does not necessarily indicate any true diabetic state, that it will usually subside of its own accord, and that the employment of insulin is usually not necessary.

1. Schäffer, H.; Bucka, E., and Friedländer, K.: Ueber die Einwirkung des Insulins und der Hypoglykämie auf das menschliche Herz: Nach elektrokardiographischen Untersuchungen, Ztschr. f. d. ges. exper. Med. **57**: 35-67, 1927. Soskin, Samuel; Katz, L. N.; Strouse, Solomon, and Rubinfeld, S. H.: Treatment of the Elderly Diabetic Patient with Cardiovascular Disease, Arch. Int. Med. **51**: 122-142 (Jan.) 1933.

2. Chasanoff, M.: Ueber den Blutzucker bei Herzkrankheiten, Klin. Wchnschr. **8**: 934-936 (May 14) 1929.

3. Edelmann, A.: Ueber die Bedeutung der Glykosurie und Hyperglykämie bei Erkrankungen der Koronararterien, Wien. klin. Wchnschr. **47**: 165-168 (Feb. 9) 1934.

4. Scherf, D.: Hyperglykämie und Glykosurie bei Coronarthrombose, Wien. klin. Wchnschr. **46**: 69-71 (Jan. 20) 1933.

5. Levine, S. A.: Coronary Thrombosis; Its Various Clinical Features, Medicine **8**: 245-418 (Sept.) 1929.

6. Cruickshank, Norman: Coronary Thrombosis and Myocardial Infarction with Glycosuria, Brit. M. J. **1**: 618-619 (April 11) 1931.

7. Gottsegen, G.: Coronarthrombose und Diabetes, Arch. f. Verdauungskr. **53**: 36-40 (Jan.) 1933.

8. Raab, A. P., and Rabinowitz, M. A.: Glycosuria and Hyperglycemia in Coronary Thrombosis, J. A. M. A. **106**: 1705-1708 (May 16) 1936.

9. Gigon, A.: Diabetes und Insulintherapie, Schweiz. med. Wchnschr. **53**: 882-887 (Sept. 20) 1923.

10. Nicely, W. E., and Edmondson, C. C.: The Use of Insulin in the Treatment of Diabetes, Am. J. M. Sc. **167**: 570-586 (April) 1924.

11. Soskin, Katz, Strouse and Rubinfeld,[1] von Haynal, E.: Electrokardiographische Untersuchungen über Insulinwirkung auf das Herz, Klin. Wchnschr. **4**: 1729-1731 (Sept. 3), 403-405 (Feb. 26) 1925. von Haynal, E.: Vidovszky, L., and Györgi, G.: Electrokardiographische Untersuchungen über Insulinwirkung auf das Herz: Insulin und Geschädigter Herzmuskel, ibid. **7**: 1543-1549 (Aug. 12) 1928. Middleton, W. S., and Ostway, W. H., Jr.: Insulin Shock and the Myocardium, Am. J. M. Sc. **181**: 39-52 (Jan.) 1931.

12. Büdingen, T.: Metabolic Treatment of the Heart with Intravenous Infusions of Dextrose, Schweiz. med. Wchnschr. **53**: 395-400 (April 19) 1923.

13. Smith, F. M.; Gibson, R. B., and Ross, Nelda G.: Diet in the Treatment of Cardiac Failure, J. A. M. A. **88**: 1943-1947 (June 18) 1927.

SUMMARY

1. A patient suffering with acute coronary occlusion had transitory hyperglycemia and glycosuria.

2. Hyperglycemia and glycosuria are common to the syndrome of acute coronary occlusion, as is borne out by the study of a series of seventy-four cases.

3. Such clinical changes are usually of a transitory nature and do not necessarily indicate any true diabetic state.

4. A high level of blood sugar is beneficial rather than harmful in acute cardiac patients, as is evidenced in the literature.

5. The employment of insulin in the therapy of such cases is usually not necessary and, if undertaken, must be done with caution.

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HYPERSENSITIVITY TO ACETYL-SALICYLIC ACID (ASPIRIN)

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Among the most dramatic and dangerous manifestations of allergy are those reactions which occur following the ingestion, by hypersensitive individuals, of familiar and ordinarily innocuous drugs. Such reactions not only may defeat the purpose for which the drug was administered but may produce a new train of distressing symptoms and, in extreme cases, may lead to death. Hypersensitivity to drugs of all types has been recognized for a long time and reports of reactions from even the newest drugs follow closely on their introduction into common use. It is to be expected, therefore, that hypersensitivity to acetylsalicylic acid (aspirin), because of the frequent and promiscuous use of this drug, would be relatively more frequent than hypersensitivity to other drugs. Our experience as well as that of others [1] bears this out.

This report is based on a review of the literature and a study of sixty-two cases of true hypersensitivity to acetylsalicylic acid from the records of the Mayo Clinic. Cases of poisoning from acetylsalicylic acid, such as those reported recently by Dyke [2] and by Neale,[3] are not under consideration here since the condition in those cases was the result of overdosage rather than of specific hypersensitivity. For purposes of comparison we have summarized a series of thirty-three cases of hypersensitivity to acetylsalicylic acid reported in the literature. This by no means represents the total number of cases reported but merely those concerning which enough detail was given to render them suitable for tabulation. Even so, this series is not strictly comparable with ours, for many of the reports are incomplete and many of the authors were concerned with but a single phase of hypersensitivity to acetylsalicylic acid.

The earliest report we have encountered was that of Hirschberg,[4] who in 1902 observed a case of urticaria and purpura following the ingestion of 1 Gm. of acetylsalicylic acid. He had no conception of allergic diseases as they are thought of today, but he did compare the reaction with some he had observed following the use of quinine and antipyrine. Most of the remaining articles are reports of small series or isolated cases. No one apparently has attempted to survey the field as a whole.

THE GROUP AS A WHOLE

Incidence.—We have no knowledge of the incidence of hypersensitivity to acetylsalicylic acid in the general population. Most cases undoubtedly go undiagnosed or unreported. It is significant that during recent years, while our threshold of suspicion of sensitivity to acetylsalicylic acid has been relatively low, the frequency with which the diagnosis is made has been increasing. The actual incidence probably is much higher than ordinarily supposed. "Aspirin sensitivity," stated Coca,[1] "is the commonest form of drug hypersensitivity encountered in atopy." It likewise has been recognized that hypersensitivity to acetylsalicylic acid, or aspirin, is particularly common among asthmatic patients. Giving 5 grains (0.3 Gm.) of acetylsalicylic acid to each of 100 asthmatic patients, van Leeuwen [5] noted reactions in sixteen. He felt, however, that this figure was too high for general application, as sensitivity to acetylsalicylic acid is more common among patients with severe asthma. Van Leeuwen estimated, therefore, that about 10 per cent of all asthmatic persons are specifically allergic to acetylsalicylic acid and that the percentage is even greater among those who have severe asthma. Our impression clinically is that this estimate is entirely too high for the group of asthmatic patients encountered in this country. We feel that the incidence is much higher than is generally supposed, however, as can be demonstrated by routine questioning of allergic patients with reference to sensitivity to drugs.

Sex.—There is a definite preponderance of females in the group of patients hypersensitive to acetylsalicylic acid. Among our patients the ratio was forty females to twenty-two males. In the cases assembled from the literature the ratio was nineteen females to fourteen males. Although we have no data on this point, we believe this difference to be an expression of the greater tendency on the part of women to resort to the use of anodynes rather than an expression of any specific difference in the sexes.

Age.—At the time of registration at the Mayo Clinic, two thirds of our patients were between 31 and 50 years of age; 90 per cent were between the ages of 21 and 60 years. Cases from the literature show a similar distribution.

Age at Onset.—Of greater interest, however, is the age at which the first symptoms of hypersensitivity to acetylsalicylic acid were observed. One patient was but 10 years old; another had reached the age of 64 years. Approximately two thirds of the group were between 21 and 50 years. Thus, sensitivity to acetylsalicylic acid is prone to appear in individuals of middle age, at a somewhat later age than is characteristic of the onset of most allergic diseases.

Familial and Personal History of Allergy.—Of forty-six patients interrogated, thirty-two (78 per cent) gave a definitely positive history of allergic phenomena

From the Division of Medicine, the Mayo Clinic.

1. Coca, A. F.; Walzer, Matthew, and Thommen, A. A.: Asthma and Hay Fever in Theory and Practice, Baltimore, C. C. Thomas, 1931, pp. 219 to 280. Cooke,[a] Duke,[b] van Leeuwen.[5]
2. Dyke, S. C.: Case of Acetylsalicylic Acid (Aspirin) Poisoning, Lancet **2**: 613-614 (Sept. 14) 1935.
3. Neale, A. V.: Aspirin Poisoning, Brit. M. J. **1**: 109-110 (Jan. 18) 1936.
4. Hirschberg: Mittheilung über ein Fall von Nebenwirkung des Aspirin, Deutsche med. Wchnschr. **28**: 416 (June 5) 1902.
5. van Leeuwen, W. S.: Pathognomonische Bedeutung der Ueberempfindlichkeit gegen Aspirin bei Asthmatikern, München. med. Wchnschr. **75**: 1588-1591 (Sept. 14) 1928.

among their blood relatives. Fourteen did not have knowledge of any such familial tendency. An almost identical incidence of familial allergy, twelve (80 per cent) out of fifteen, was noted by Cooke [6] in a group of patients sensitive to drugs. On the other hand, van Leeuwen concluded that most individuals who are allergic to acetylsalicylic acid have no hereditary allergic background, a conclusion that is contradicted by our observations.

Most of the patients allergic to acetylsalicylic acid whose cases are reported in the literature were sufferers from some allergic disease, most frequently asthma. All but three of our patients had or had had one or more allergic disorders in addition to their hypersensitivity to acetylsalicylic acid. Of these three, two gave a positive familial history of allergy. It seems very significant, therefore, that all but one patient in a group of sixty-two gave a positive familial or personal history of allergy. This finding reemphasizes [7] the potential danger from the indiscriminate use of drugs in cases in which there is evidence of major allergic disease. No more convincing argument against the use of acetylsalicylic acid as a remedy for asthma is needed except to point out, as we do later in this article, the cases of death resulting from its use by asthmatic patients.

Types of Allergic Reaction Following Ingestion of Acetylsalicylic Acid

	Patients	Per Cent
Asthma	38	61.2
Urticaria and angioneurotic edema	12	19.3
Vasomotor rhinitis	3	4.8
Urticaria with severe abdominal cramps	1	1.6
Urticaria and purpura	1	1.6
Asthma and angioneurotic edema or urticaria	2	3.2
Gross purpura	1	1.6
Abdominal cramps and salivation	1	1.6
Asthma and vasomotor rhinitis	2	3.2
Asthma and abdominal cramps	1	1.6
	62	100.0

It is hardly necessary for us to point out that the value of acetylsalicylic acid as a drug is not being questioned. It would seem that nonallergic individuals need have little or no concern about experiencing from the ingestion of this drug the reactions that are described in this paper. The fundamental difficulty in cases of hypersensitivity to the drug lies not in the drug itself but in the individual who ingests it.

It is interesting to note that not one of our patients came to the clinic primarily because of hypersenstivity to acetylsalicylic acid. A great majority, however, came with or because of some allergic complaint, and such complaints usually were multiple. Forty-three patients had had asthma, thus illustrating the frequent relationship between the two disorders. Twenty-one had vasomotor rhinitis, eleven had hay fever, and ten gave a history of urticaria or angioneurotic edema. Six patients were subject to migraine. Four patients of the group had sinusitis, and twenty-one were found to have nasal polyps.

Features of the Allergic Reaction to Acetylsalicylic Acid.—The administration of a tablet of acetylsalicylic acid to one of these hypersensitive individuals may result in one or several different allergic reactions. Practically all the commonly accepted major allergic syndromes except eczema were encountered in our series. The respiratory mucous membrane is by far the most frequently reacting tissue; the skin, subcutaneous tissues and blood vessels next, and the gastro-intestinal tract next. A summary of the reactions of our patients to the administration of acetylsalicylic acid is given in the table.

It is interesting to note that the reaction which follows the ingestion of acetylsalicylic acid is usually, although not necessarily, an exacerbation of the patient's allergic disease. We have observed cases of vasomotor rhinitis in which asthmatic attacks were experienced following the taking of acetylsalicylic acid and others in which giant urticaria developed but in neither of which instances was any aggravation of nasal symptoms experienced. Such cases, however, are the exception rather than the rule.

Speed of Reaction.—The time intervening between the administration of acetylsalicylic acid and the onset of symptoms usually is short, the minimal recorded time being ten minutes and the longest two hours. This is so striking that it would seem that symptoms occurring at an interval longer than two hours, or at the most three hours, after the ingestion of acetylsalicylic acid are probably not due to true allergic sensitivity to the drug. "Delayed" reactions were not encountered in our series. Two patients (3 per cent) stated that their symptoms (asthma) occurred "almost immediately" after taking acetylsalicylic acid. Thirty patients (48 per cent) stated that their reaction occurred within one hour or less, and four (6 per cent) stated that their symptoms occurred in from one to two hours. The average recorded interval was thirty-two minutes. The reports in the literature agree closely with our experience. In Cooke's series the symptoms began from fifteen to twenty minutes after the ingestion of acetylsalicylic acid.

The speed of reaction varied considerably with the type of reaction. For instance, the average interval between the ingestion of acetylsalicylic acid and the onset of asthma in twenty-three cases was twenty-five minutes. Vasomotor rhinitis appeared in one case ten minutes after the taking of acetylsalicylic acid. Eight patients had hives on the average of fifty minutes after taking the drug. Three patients experienced abdominal cramps on the average of sixty-five minutes after ingesting it. The explanation for this variation in the interval before a reaction developed is not at once apparent.

Eosinophils and Sedimentation Rate.—Differential blood counts were not made as a routine in our series of cases. Six differential counts were made for as many individuals: Two showed an absence of eosinophils; three, 2 per cent of eosinophils, and one, 9 per cent of eosinophils. Cooke found an increase of eosinophils of from 10 to 15 per cent in "practically all" his cases in which sensitiveness to antipyretics was present. Van Niekirk [8] found that the sedimentation rate of erythrocytes is normal in cases of asthma but greatly accelerated in cases of asthma in which hypersensitiveness to acetylsalicylic acid is shown. We have no data on this point.

Types of Reaction.—Asthma: This is at once the most frequent and most serious form of reaction to

6. Cooke, R. A.: Allergy in Drug Idiosyncrasy, J. A. M. A. **72**: 759-760 (Sept. 6) 1919.

7. Duke, W. W.: Aspirin Allergy: A Method of Testing for Aspirin Sensitiveness and Method of Avoiding Aspirin Catastrophes, J. Allergy **4**: 426-427 (July) 1933. Coca.[5]

8. Van Niekirk, quoted by van Leeuwen.[20]

acetylsalicylic acid among those hypersensitive to the drug. All the fatal cases of hypersensitiveness to acetylsalicylic acid which we have encountered in the literature have been of this type. Vander Veer,[9] in the course of a discussion of the problem of asthma, stated: "We have the records of at least two dozen aspirin [sensitive] cases, in one of whom there developed an attack of asthma lasting three weeks following the ingestion of 5 grains and another patient who immediately went into shock and died in five minutes." Lamson and Thomas[10] reported the case of a woman with asthma, known to be sensitive to acetylsalicylic acid, who unwittingly took a dose of the drug in the form of an "asthma powder" and died as a result of the ensuing shock. Dysart[11] reported a case of asthma in which the patient knew she was sensitive to acetylsalicylic acid but who nevertheless deliberately took 5 grains (0.3 Gm.) of the drug and was dead within ten minutes. Francis, Ghent and Bullen[12] observed a case that illustrates still a third fashion in which the asthmatic patient who is sensitive to acetylsalicylic acid may come to grief. Their patient had had a previous unfortunate experience with acetylsalicylic acid, once having had an asthmatic attack of four days' duration as a result of taking 5 grains of the drug. Sometime later, having a severe attack of asthma, the patient sought relief at a hospital where he had not been treated previously. Ephedrine, epinephrine, amytal and other remedies were administered without much effect. When 10 grains (0.65 Gm.) of acetylsalicylic acid was given, the patient promptly went into a condition of shock and died thirty hours later despite all therapeutic efforts, including the administration of oxygen.

Violent bronchial asthma occurred in nine of fifteen cases of sensitivity to acetylsalicylic acid in Cooke's series; in one case almost fatal asphyxia was the result. Estimating that 10 per cent of all asthmatic patients are allergic to acetylsalicylic acid, van Leeuwen was of the opinion that these patients should be regarded as a special subgroup among the asthmatic. He noted that almost without exception they had severe asthma and were sensitive to many things besides acetylsalicylic acid. He found the treatment of these patients for asthma to be disappointing. Epinephrine, he stated, is "remarkably ineffective"; alcohol and morphine he found to be more useful.

Among the patients in our series who were asthmatic, three stated that their first attack of asthma had followed the use of acetylsalicylic acid. Van Leeuwen also observed patients who experienced their first asthmatic attack following ingestion of a tablet of acetylsalicylic acid and who continued to have frequent, even daily, attacks of a very severe nature thereafter. Asthma alone occurred in thirty-eight of the sixty-two cases (61 per cent). In combination with urticaria, vasomotor rhinitis or abdominal cramping, asthma occurred in five (8 per cent) additional cases. In only one case in our series was the asthma described as "mild wheezing"; in all others it was very severe. Palpitation was a distressing accompaniment of asthma and, in a few instances, cyanosis was present. One patient had learned from experience to avoid acetylsalicylic acid but had had very severe asthmatic reactions, necessitating hospitalization, from taking nationally advertised headache and cold remedies which apparently contained quantities of this drug.

The duration of these asthmatic responses to the administration of acetylsalicylic acid varied from two hours to two days. Duke[7] stated that the reaction can last for from several days to one or two weeks or more. Cooke referred to one patient whose attack was prolonged for three weeks, but he stated that the attacks usually last from eight to thirty-six hours.

A recent experience with a patient who had an alarming attack of asthma after the administration of acetylsalicylic acid is as follows:

A farmer, aged 43, had had asthma for eighteen months. It came on after years of colds and prolonged coughing spells with expectoration. Mild at first, it became severe six months prior to his admission and, when first seen, he required epinephrine at least once daily and twice at night for relief of symptoms. He had lost 47 pounds (21 Kg.). He had had nasal congestion for years and a brief episode of eczema six years previously. A sister had had asthma.

Physical examination disclosed two pertinent features; the lungs were full of wheezing râles, breathing was labored, and both sides of the nose were filled with polyps. Sensitization tests were entirely negative after intradermal injections of airborne and food antigens. Stereoscopic roentgenograms of the pulmonary fields were essentially negative, and roentgenograms of the sinuses revealed polyps in the left frontal sinus, right and left ethmoids, and left antrum.

The patient was sent to the hospital for removal of the nasal polyps and for investigation of the sinuses. During the night before operation the patient was given 10 grains (0.65 Gm.) of acetylsalicylic acid. He had taken this drug but rarely in the past and remembered no ill effects from its use. Within thirty minutes after he took the drug this time, however, very severe and alarming asthma developed associated with cyanosis, perspiration, nausea and prostration. The pulse rate rose to 120 beats per minute and respirations rose from 18 to 32. Epinephrine failed to influence the asthma even when administered repeatedly at intervals of twenty minutes. Morphine gave but slight relief.

When he was placed in a tent containing 80 per cent oxygen, the patient's color improved somewhat but no other change could be noticed. The cervical musculature was contracted and the head was thrown back, making an almost straight tube of his trachea, pharynx and mouth. The mouth was open and dry and the breathing was very labored. The patient's condition became alarming; exhaustion was apparent. About thirteen hours after the onset of the acute asthma, a helium-oxygen mixture was administered, which definitely eased the effort of breathing but did not influence the asthma. Slight, although definite, improvement was noticed two and a half hours later and, in the following two hours, recovery seemed assured. The administration of helium was discontinued after almost four hours, but the patient was kept in an oxygen tent until the following morning, approximately thirty-two hours after the onset of the attack. Three days later bilateral antral windows were made and the nasal polyps were removed. Convalescence from this operation was uneventful.

The ineffectiveness of epinephrine and morphine in this case is characteristic of the more severe reactions to acetylsalicylic acid experienced by other patients in the series. It would seem that relief is obtained only when the effect of the drug wears off.

Vasomotor rhinitis: Typical, although severe, symptoms of vasomotor rhinitis occurred in three cases as a result of patients taking acetylsalicylic acid; it occurred in combination with asthma in two other cases. One patient experienced continuous sneezing and blockage of the nose and another described her reaction as a

9. Vander Veer, Albert, Jr.: The Asthma Problem, New York M. J. **113**: 392-399 (Sept. 18) 1920.
10. Lamson, R. W., and Thomas, Roy: Some Untoward Effects of Acetylsalicylic Acid, J. A. M. A. **99**: 107 (July 9) 1932.
11. Dysart, B. R.: Death Following Ingestion of Five Grains of Acetylsalicylic Acid, J. A. M. A. **101**: 446 (Aug. 5) 1933.
12. Francis, Nathan; Ghent, O. T., and Bullen, S. S.: Death from Ten Grains of Aspirin, J. Allergy **4**: 504-506 (July) 1933.

"terrible spell of hay fever." Bolt[13] and Macht[14] described nasal congestion as well as other symptoms following ingestion of acetylsalicylic acid in persons hypersensitive to the drug.

Urticaria and angioneurotic edema: The urticarial and angioneurotic edema-like reactions from the ingestion of acetylsalicylic acid were usually very distressing. Severe urticaria and angioneurotic edema following the ingestion of this drug by individuals hypersensitive to it are described frequently in the literature.[15] Edema of the glottis, tongue and throat also occurs occasionally.[16]

Coca[1] felt that acetylsalicylic acid is one of the most common causes of angioneurotic edema. Twelve patients (19 per cent) in our series reacted severely, with urticaria and angioneurotic edema. In addition, one patient with urticaria had severe abdominal cramps, and two others had asthma with urticaria. Severe palpitation sometimes accompanied the urticaria, and one patient had a temperature of 100 F. One patient, a man, had a more severe reaction of this type, with severe urticaria, "giant hives," and violent burning all over his body, which was almost unbearable in the scalp and on the palms and soles and occasionally was accompanied by purpura.

The patients in this group offered vivid descriptions of their own reactions to acetylsalicylic acid: One mentioned swelling of the face and bulging of the eyes; several mentioned swelling of the throat or tongue, and one patient's thumb was "twice normal size." Another patient described her face, after she had ingested one 5-grain tablet of acetylsalicylic acid, as a "terrible sight"; her "whole face was swollen," her eyes were "swelled shut" and her lips were "swollen and rolled out." A man who reacted with severe urticaria every time he took acetylsalicylic acid since the age of 15 years said that on one occasion he had been so gravely ill after taking it that he was "brought home to die."

No instance of dermatitis medicamentosa following the taking of acetylsalicylic acid was included in this series. The reactions to the drug in cases of dermatitis medicamentosa are delayed and usually mild, and the subsequent use of the drug does not provoke a repetition of symptoms. Clearly, the mechanism is entirely different from that of true hypersensitivity to drugs in the atopic sense.

Abdominal pain: Three patients in the series experienced abdominal pains, described in each case as "very severe abdominal cramps":

One patient, a man, aged 45, whose allergic complaints were asthmatic bronchitis and vasomotor rhinitis, stated that forty-five minutes after taking acetylsalicylic acid by mouth he experienced "swelling up of the stomach," abdominal "spasms" and severe asthma. He volunteered the statement that he would never take acetylsalicylic acid again. He was not sensitive to any other drug as far as he knew and his skin tests to common allergens were negative. He was not given a skin test with acetylsalicylic acid.

A second patient, a girl, aged 20 years, whose familial and personal history were negative for allergy, took 10 grains (0.65 Gm.) of acetylsalicylic acid and, about an hour later, experienced severe abdominal cramping, with swelling of the face, tongue and fingers. Slight erythema and fever (100 F.) were noted. The worst of the reaction lasted about three and a half hours, but the swelling of the fingers persisted for twelve hours. This patient estimated that she previously had used the drug only six or seven times, always without untoward effects.

The third of these patients was a woman, aged 55, who had had hay fever, urticaria and angioneurotic edema, and she had a positive familial history of allergy. Skin tests were positive for pollens and negative for other air-borne and food antigens. She previously had used acetylsalicylic acid with no bad results until, for no reason known to her, she began to experience marked salivation about an hour or two after taking the drug. With this salivation she "doubled up" with griping, colicky pains and abdominal contractions. This occurred several times, always in the same way. Taking the drug before going to bed, she would go to sleep only to be awakened by these symptoms. It was her practice to get up then and to drink a quantity of sodium bicarbonate in water, which relieved her distress and permitted her to return to sleep, only to be reawakened by pain, necessitating the use of more soda. She stressed the fact that soda gave only temporary relief until the attack wore off of its own accord.

As an emergency treatment the effect of soda in this case was very useful and should be tried in others. This will be referred to later when the treatment of patients with reactions to acetylsalicylic acid is considered.

It will be noted that external manifestations of edema or urticaria were encountered in one of the three patients who had abdominal pain, which lends some support, therefore, to the theory that the abdominal pain in such cases is due to edema of some portion of the gastro-intestinal tract or peritoneum. Does the marked salivation noted by the third patient indicate reflex stimulation of the salivary glands from abdominal irritation or from hypersensitivity of the nervous control of the salivary glands to acetylsalicylic acid? A similar instance of salivation and abdominal pain following the ingestion of acetylsalicylic acid has been reported by Macht.

Purpura: Four references to purpura-like reactions after the ingestion of acetylsalicylic acid were found in the literature. Hirschberg reported the case of a man who had severe, generalized urticaria, angioneurotic edema and nasal congestion following ingestion of 1 Gm. of the drug. Later, raised red spots the size of a dime appeared on his face, neck and mucous membranes and disappeared after four days. A very similar case has been reported by Otto. Karunaratne described an erythematous rash over the face and arms of a man, aged 32, which resulted, together with cyanosis, asthma and edema of the face and neck, from the ingestion of 10 grains (0.65 Gm.) of acetylsalicylic acid. The rash subsided in three days. A similar reaction to taking the

13. Bolt, R. F.: Aspirin Idiosyncrasy, Brit. M. J. **2**: 560 (Nov. 1) 1919.

14. Macht, D. I.: A Case of Aspirin Poisoning, M. Rec. **80**: 826 (Oct. 21) 1911.

15. Dyke,[1] Hirschberg,[4] Bolt,[13] Gilbert,[16] Morgan,[16] Shelby,[16] Brown,[16] Coke,[27] Macht[14] and:

Abercrombie, P. H.: Poisoning After Small Doses of Aspirin, Brit. M. J. **1**: 1314 (June 3) 1911.

Clyne, Charles: Case of Intolerance to Aspirin, Indian M. Gaz. **55**: 457-458 (Dec.) 1920.

Cooke, R. A.: Studies in Specific Hypersensitiveness: III. On Constitutional Reactions: The Dangers of the Diagnostic Cutaneous Test and Therapeutic Injection of Allergens, J. Immunol. **7**: 119-146 (March) 1922.

Franke: Vergiftungserscheinungen nach Aspirin, München. med. Wchnschr. **50**: 1299-1300 (July 28) 1903.

Graham, Cyrus: Idiosyncrasy to Aspirin, J. A. M. A. **56**: 261-262 (Jan. 28) 1911.

Karunaratne, W. A. E.: A Case of Aspirin Idiosyncrasy, Brit. M. J. **2**: 42 (July 12) 1919.

Killen, S. J.: Poisoning After Small Doses of Aspirin, ibid. **1**: 476 (Feb. 25) 1911.

Kitchin, T. D.: A Case of Idiosyncrasy to Acetylsalicylic Acid, J. A. M. A. **74**: 889 (March 27) 1920.

Meyer: Nebenwirkung nach dem Gebrauch von Aspirin, Deutsche med. Wchnschr. **29**: 124 (Feb. 12) 1903.

Otto: Ueber einen weiteren Fall von Nebenwirkung des Aspirins, ibid. **29**: 123-124 (Feb. 12) 1903.

Reed, E. N.: Idiosyncrasy to Aspirin (Acetylsalicylic Acid), J. A. M. A. **69**: 773 (March 7) 1914.

Shookhoff, Charles, and Lieberman, D. L.: Hypersensitiveness to Acetylsalicylic Acid Expressed by an Angina Pectoris Syndrome With and Without Urticaria, J. Allergy **4**: 506-512 (Sept.) 1933.

Tyrrell, E. J.: Intolerance of Aspirin, Lancet **1**: 1118 (June 28) 1919.

16. Gilbert, G. B.: Unusual Idiosyncrasy to Aspirin, J. A. M. A. **56**: 1262 (April 29) 1911. Morgan, Conwy: A Case of Poisoning After Small Doses of Aspirin, Brit. M. J. **1**: 307 (Feb. 11) 1911. Shelby, E. P.: Acute Poisoning by Five Grains of Acetylsalicylic Acid—"Aspirin," J. A. M. A. **71**: 1381 (Oct. 26) 1918. Pridham, G. H.: Aspirin Poisoning and Idiosyncrasy, Brit. M. J. **2**: 632 (Nov. 15) 1919.

drug had occurred three years previously. Reed has reported the case of a man, aged 36, who took 5 grains (0.3 Gm.) of the drug, vomited a half hour later, and was cyanotic and severely asthmatic two and a half hours later, his face being edematous and his nose congested. Recovery occurred after five hours, but the next day a papular, purpuric rash was noted over his trunk. The patient had experienced a similar reaction two and a half years before.

Two of our patients noted submucosal or subcutaneous hemorrhages after the ingestion of acetylsalicylic acid:

A woman, aged 50, who had a positive familial history of allergy and who herself had hay fever and migraine, had noted repeatedly that the ingestion of even "tiny amounts" of acetylsalicylic acid resulted in subcutaneous hemorrhages in the hands and legs, together with submucosal hemorrhages in the mouth and throat. She also speculated on the possibility of the repeated ingestion of this drug for headaches, which she was having almost daily at that time, being responsible for her metrorrhagia and menorrhagia. Hysterectomy had been performed because of hemorrhage but no organic lesion had been found in the uterus after it was removed. Realizing that purpura always followed the taking of acetylsalicylic acid in her case, she discontinued its use and had no further trouble until she took a dose of a nationally advertised antacid mixture containing acetylsalicylic acid, when she again had purpura.

The second patient, a man, aged 58, who was definitely allergic (vasomotor rhinitis, asthma, urticaria, food allergy) and who had a positive familial history of allergy but for whom all skin tests were negative, found that from twenty to thirty minutes after taking acetylsalicylic acid by mouth, severe generalized urticaria of the giant type would develop, and occasionally vesicles and definite subcutaneous hemorrhages also would develop. Epinephrine subcutaneously gave some symptomatic relief.

Angina pectoris syndrome: A type of reaction which we have not observed but which is of great interest is that reported by Shookhoff and Lieberman. These authors observed three cases in which the ingestion of acetylsalicylic acid was followed by viselike pain, of typical coronary distribution, accompanied by a fall in blood pressure. Urticaria also developed in two of the cases. One patient was given acetylsalicylic acid while under observation, and transient electrocardiographic changes were noted (prolongation of PR interval in derivation II, distinct notching of S in derivation II, increased amplitude of S in derivation III, and inverted T wave in derivation III).

DIAGNOSIS

The diagnosis of hypersensitivity to acetylsalicylic acid is usually made accidentally and in an obvious fashion by the patient or his physician. The very real dangers of reactions to acetylsalicylic acid among patients with asthma make it very much worth while to be able to determine such hypersensitivity by means other than giving the drug by mouth. Skin testing, unfortunately, is both inefficient and potentially dangerous. Cooke stated that positive cutaneous reactions will not be obtained except in those cases in which urticaria is the clinical manifestation of the hypersensitivity. He further observed that complete absence of skin allergy, with hypersensitiveness limited to the respiratory mucous membranes, occurs only with drug allergy and particularly with hypersensitiveness to acetylsalicylic acid. Van Leeuwen, working with asthmatic persons allergic to acetylsalicylic acid, found that both cutaneous and intracutaneous skin tests with foods were always negative.

Other investigators [7] have warned against the dangers of skin testing, particularly by the intracutaneous technic, in cases in which patients are hypersensitive to acetylsalicylic acid. Cooke related a case in which a severe constitutional reaction lasting three days followed the intradermal injection of 1/10 grain (0.006 Gm.) of acetylsalicylic acid. Only two of our patients (both of whom had nasal polyps) were tested with acetylsalicylic acid: scratch tests with a 1:1,000 solution of acetylsalicylic acid resulted in no reaction in one case, in which the patient gave a clinical history of severe asthma lasting two days following ingestion of the drug, and in a grade 1+ reaction in the other, in which the patient experienced a severe urticarial reaction following ingestion of the drug.

From the purely clinical standpoint, a skin test with acetylsalicylic acid adds very little to the care and study of the patient known to be sensitive to the drug, and the risk of indiscriminate testing in these cases is greater than the value of the test.

In an effort to avoid these dangers, and likewise to provide a method of testing more reliable than the cutaneous methods, Duke has suggested a very simple procedure. A small speck of acetylsalicylic acid is placed in the suspect's mouth. If the individual is allergic to the drug, symptoms such as cough, asthma, itching or edema should appear within one minute. If they do, any of the drug remaining in the mouth is immediately destroyed by rinsing the mouth with a dilute acid solution (vinegar). Duke reported the use of this test with positive results in three cases. We have employed Duke's technic in too few cases to comment on its value at this time.

Coca and Grove [17] were unable to demonstrate the Prausnitz-Kuestner reaction with the serum of patients sensitive to acetylsalicylic acid and quinine even though some of them manfested positive cutaneous reactions.

Although but two of our patients were skin-tested with acetylsalicylic acid, most of them were tested with the common air-borne and food allergens. Excluding those sensitive to pollen, it seems characteristic of the group that the skin tests were frequently negative. Twenty-three (37 per cent) had entirely negative results from all the allergens employed in each case. Positive or questionably positive tests, exclusive of pollens, were found in thirteen cases. Seven patients reacted to food antigens, seven to orris root, seven to feathers, seven to danders, and one to kapok. Excluding pollens, reactions of grade 3+ to orris root and feathers were the greatest reactions obtained.

TREATMENT

It has been pointed out [18] that the best treatment for patients who are hypersensitive to drugs is absolute avoidance of the drug. To the patient who has experienced a severe reaction, of whatever type, from the ingestion of acetylsalicylic acid, it hardly is necessary to emphasize the importance of avoiding the drug entirely, even in minute quantities. One not infrequently hears such patients solemnly state "I will never take another dose of aspirin." But such an individual, in spite of all his good intentions, runs two risks: (1) that he will take the drug or be given it unknowingly in some prescription or proprietary remedy or (2) that some one unfamiliar with the severity of the

17. Coca, A. F., and Grove, Ella F.: Studies in Hypersensitiveness: XIII. A Study of the Atopic Reagins, J. Immunol. 10: 445-464 (March) 1925.
18. Unger, Leon: Drug Idiosyncrasy, J. Allergy 3: 76-80 (Nov.) 1931.

reaction experienced by him will urge him to take it because "one tablet of aspirin has never hurt any one." Should that well meaning but uninformed individual be present to witness the result of his careless advice, he would not be likely to question the next person's statement that acetylsalicylic acid or some other drug or food made him ill. The patient known to be sensitive in this way to acetylsalicylic acid should also be told of the proprietary medicines in which he can expect to find it. He will then do the rest. He should also be told that "acetylsalicylic acid" and "acidi-acetylsalicylici" appearing on prescriptions are "aspirin."

Widal [19] and others have reported that hypersensitiveness to a drug (antipyrine) may be overcome by feeding small amounts of the drug first. Coca,[1] however, was of the opinion that hyposensitization with acetylsalicylic acid is "unsatisfactory and because of the risk involved should not be undertaken except under compulsion of absolute necessity." Van Leeuwen has expressed a similar opinion against desensitization with acetylsalicylic acid.

The Attack.—The treatment of the patient with a reaction following the ingestion of acetylsalicylic acid is chiefly symptomatic and dependent on the nature and severity of the reaction. Repeated hypodermic injections of epinephrine will in most instances be found useful, although entirely ineffectual for some of the worst reactions. The experience of one of our patients in obtaining very satisfactory temporary relief by the repeated ingestion of a solution of sodium bicarbonate suggests that it be tried in other cases. Since another of our patients stated that she was unable to take sodium salicylate as well as acetylsalicylic acid, it is possible that most patients will derive no benefit from this measure. To be effective, the solution of sodium bicarbonate should be given very early, at which time, if there are no contraindications, gastric lavage might also be considered.

If any acetylsalicylic acid remains in the patient's mouth at the time of the reaction, in addition to its prompt removal Duke [7] advised rinsing the mouth repeatedly with a solution containing 4 cc. of dilute acetic acid or vinegar to a glass of water.

Since the majority of patients who are sensitive to acetylsalicylic acid react with violent and prolonged asthma, it not infrequently will be necessary to use oxygen, and possibly a mixture of helium and oxygen,[20] such as was used for one of our patients to reduce the fatigue from hours of asthmatic dyspnea. The use of morphine does not relieve the asthma; it has a depressant effect and it would seem best to omit it in such instances.

Comment.—The question as to whether hypersensitivity to acetylsalicylic acid is congenital or acquired is of theoretical and considerable practical importance. Karunaratne reported the case of a man of 32 who, so far as could be determined, had taken acetylsalicylic acid only twice during his life. Both times he experienced violent reactions. We have already referred to similar observations noted by van Leeuwen.[5]

Among our patients there were fifteen who believed that their first encounter with acetylsalicylic acid was followed by an allergic reaction of some sort. Unfortunately, one cannot be certain that these patients had not taken acetylsalicylic acid previously. They may have taken it as a constituent of a prescription or "patent medicine" when its presence was unsuspected or they may have forgotten the incident of taking it since no extraordinary reaction had followed. Most of our patients, and many of those reported in the literature,[21] had taken the drug many times without ill effect. Coke [22] concluded that this hypersensitivity was always acquired; he believed that it affected those who took the drug in considerable quantity and then went for a long time without taking it. The histories of our patients do not bear this out. Five of them said that they rarely had used acetylsalicylic acid previously; seven had used it occasionally and seven more often still.

In no instance in our series of cases or in those reported in the literature was more than one member of a family sensitive to acetylsalicylic acid. One allergic patient who was sensitive to the drug had a son who also was definitely allergic, but he could take acetylsalicylic acid without any abnormal reaction.

These observations cannot be used to argue for or against the hereditary, as opposed to the acquired, nature of hypersensitivity to acetylsalicylic acid. Presumably a hereditary hypersensitivity need not make itself known until long after birth, at a time when other factors favor its appearance; or it may never manifest itself.

Very little concerning the actual mechanism of drug allergy is known. Van Leeuwen assumed that the allergic action of a drug is only an "augmenter action" on other subliminal reactions going on in the body. Perhaps the most significant observations are those of Landsteiner and Lampl [23] and Landsteiner,[24] who have pointed out that simple chemicals can combine with proteins to form new compounds which have specific immunologic properties.

Sensitivity to drugs is remarkably specific as a rule.[24] An individual may be hypersensitive to one drug such as acetylsalicylic acid and yet take with impunity closely related drugs such as salicylic acid, methyl salicylate and also compounds containing radicals common to acetylsalicylic acid, such as benzoic acid and sodium acetate.[6] It would seem that hypersensitivity may be manifested toward the whole molecule or merely toward radicals or groups of radicals in the molecule.[25] In the case of acetylsalicylic acid, the acetyl group seems to be the one responsible for making it the most common atopen among the salicylic compounds.

Van Leeuwen found that his patients were often sensitive to other drugs, such as phenobarbital, aminopyrine, antipyrine, sodium salicylate and barbital.[26] Of our patients, twenty stated that they knew of no other drug or medicine to which they were hypersensitive, while nineteen mentioned some drug or drugs other than acetylsalicylic acid which, for one reason or another, they could not take. Among the preparations named were quinine, sodium salicylate, acetophenetidin,

19. Widal, Fernand, and Vallery-Radot Pasteur: Anaphylaxie à l'antipyrine apparue après une longue phase désensibilisation, Presse méd. **28**: 93-95 (Feb. 4) 1920.

20. Maytum, C. K.; Prickman, L. E., and Boothby, W. M.: The Use of Helium and Oxygen in the Treatment of Severe Intractable Asthma, Proc. Staff Meet., Mayo Clin. **10**: 788-790 (Dec. 11) 1935.

21. Brown, Alexander: Note on a Toxic Effect of Aspirin, Lancet **2**: 761 (Sept. 9) 1911. Bolt,[31] Coke.[22]

22. Coke, Frank: Asthma, New York, William Wood & Co., 1923, pp. 116-119.

23. Landsteiner, Karl, and Lampl, Hans: Ueber die Abhängigkeit der serologischen Spezifizität von der chemischen Struktur (Darstellung von Antigenen mit bekannter chemischer Konstitution der spezifischen Gruppen), Biochem. Ztschr. **96**: 343-394, 1918.

24. Landsteiner, Karl: Experiments on Anaphylaxis to Azoproteins, J. Exper. Med. **39**: 631-637 (May) 1924.

25. Coca, A. F.: Hypersensitiveness, in Tice, Frederick: Practice of Medicine, Hagerstown, W. F. Prior Company, Inc. **1**, 1923.

26. van Leeuwen, W. S.: A Possible Explanation for Certain Cases of Hypersensitiveness to Drugs in Men, J. Pharmacol. & Exper. Therap. **24**: 25-32 (Aug.) 1924.

epinephrine, cocaine, iodides, aminopyrine, morphine, strychnine, "any coal tar products," and a number of proprietary preparations.

A number of patients found to their sorrow that many proprietary medicines, including a number of so-called asthma remedies,[19] contain acetylsalicylic acid. At the present time among the best known of these preparations are Alka-Seltzer, Anacin, Aspirgum, Calaspirin, Acetidine, Dr. Miles Aspirmint, M. Matte's German Asthma Powder, Empirin Compound, and Etro. Doubtless there are many others. Unfortunately for those who are sensitive to acetylsalicylic acid, the present Food and Drug Laws do not require that the words "acetylsalicylic acid" or "aspirin" appear on the labels for proprietary medicines that contain it.

Coca[1] was of the opinion that "aspirin and the closely related coal tar products are among the most treacherous drugs employed in the therapy of asthma." Duke stated that the effect of acetylsalicylic acid on patients sensitive to it can amount to a "catastrophe in every sense of the word." Our own experience amply confirms these statements.

As a diagnostic test to aid in differentiating rheumatic or infectious arthritis from tuberculous, gonorrheal or syphilitic arthritis and to evaluate the possible therapeutic value of the removal of foci of infection, Wolf[27] has proposed and used successfully what he calls the "aspirin tablet test." In light of our experience and that of others, great caution should be exercised in using this test on allergic patients.

A relationship of obscure etiology but of definite practical importance exists between the presence of nasal polyps and allergic diseases and hypersensitivity to acetylsalicylic acid in particular. Of our sixty-two patients, twenty-one (33 per cent) definitely had nasal polyps. In addition to these, a number of others, particularly those with vasomotor rhinitis, probably had them although no definite record of their existence was made. It is significant that in our series those patients who had nasal polyps responded with the worst reactions to the ingestion of acetylsalicylic acid. Nineteen of the patients who had nasal polyps had severe to grave asthma, one had "terrible hay fever," and one had generalized severe urticaria.

The prognostic importance of the presence or absence of hypersensitiveness to acetylsalicylic acid among asthmatic patients with nasal polyps was emphasized by Francis.[28] Basing his conclusions on the case histories of twenty-four patients with asthma whose nasal polyps had been removed in an attempt to benefit the asthma, he formulated these rules: 1. If a patient can take acetylsalicylic acid, removal of nasal polyps will benefit the asthma (ten cases). 2. If a patient cannot take the drug, removal of nasal polyps will make the asthma worse (eleven cases). He further warned against giving acetylsalicylic acid to asthmatic patients who have nasal polyps.

SUMMARY AND CONCLUSIONS

Hypersensitivity to acetylsalicylic acid is the most common form of drug allergy, and it is much more common than is generally supposed. A series of sixty-two cases was studied. The condition is more common among females and is limited almost exclusively to persons with a personal or familial history of allergy. Particularly noteworthy is the high incidence of hypersensitivity to acetylsalicylic acid among the asthmatic, especially among asthmatic individuals with nasal polyps.

Asthma, urticaria and angioneurotic edema are the most common forms of reaction to the ingestion of acetylsalicylic acid by sensitive individuals. The asthmatic attacks are prone to be severe, prolonged and resistant to treatment. Fatal reactions have been reported. Other types of reaction which have been observed are vasomotor rhinitis, purpura, abdominal cramps and salivation.

Skin testing should not be employed in the diagnosis of hypersensitivity to acetylsalicylic acid as such tests are both unreliable and a potential source of danger.

Scrupulous avoidance of the drug by the allergic patient is the best treatment for hypersensitivity to acetylsalicylic acid. The presence of acetylsalicylic acid in the formulas of many proprietary medicines makes them a potential source of danger to these patients. Acetylsalicylic acid, however, is a useful and effective drug, and it may be prescribed with relative safety to patients who give no history of personal or familial allergy. It may also be used with caution by allergic patients after ascertaining that it has been used previously by them without ill effect. It should never be administered, however, to asthmatic patients who have nasal polyps.

27. Wolf, H. F.: New Conceptions of Arthritis and Their Relation to Physical Therapy, Arch. Physical Therapy **15**: 405-408 (July) 1934.
28. Francis, Clement: The Prognosis of Operations for Removal of Nasal Polypi in Cases of Asthma, Practitioner **122**: 272-278 (Oct.) 1929.

DARK ADAPTATION AND VITAMIN A

A NEW PHOTOMETRIC TECHNIC

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In 1934 we[1] described a photometric test for detecting moderate degrees of vitamin A deficiency by determining ability to adapt to darkness. The observations that formed the basis of the former report were made with a Birch-Hirschfeld photometer. For reasons discussed subsequently this instrument is not adapted for satisfactory use in the manner employed. Because of the difficulties encountered, a new photometer has been devised especially for the dark adaptation test. It is our purpose in this publication to describe the use of the new photometer and also certain experimental observations that have been made with it.[2]

The new photometric technic makes use of the same basic principles as were described in our previous report. Scotopic vision is observed with relation to exposure to a bright light and to a period in darkness. The observations are made by determining the amount of light necessary for the subject to see three of the five

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1. Jeans, P. C., and Zentmire, Zelma: A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency, J. A. M. A. **102**: 892 (March 24) 1934; The Prevalence of Vitamin A Deficiency Among Iowa School Children, ibid. **106**: 996 (March 21) 1936.

2. The photometer is manufactured by the Frober-Faybor Company of Cleveland and is called the biophotometer. It was devised by the research staff of this organization entirely on their own initiative. The technic described here has been worked out in collaboration with the research staff and with their active and enthusiastic assistance in many ways. The photometer has undergone a moderate evolution during the course and as a result of the experimental observations over a considerable period. Any credit that may attach to this report belongs as much to the research staff on the Frober-Faybor Company as to the authors, if not more.

points of a dice five-spot, or quincunx, punched out of a metal screen, when the light transmitted through the holes is of decreasing intensity from the left to the right of the quincunx. Thus the essential features of the instrument include a bright light, a quincunx screen and a dim light of controllable variability of intensity for illumination through the holes of the quincunx screen.

In the schematic representation of figure 1 are shown some of the features of the new photometer.

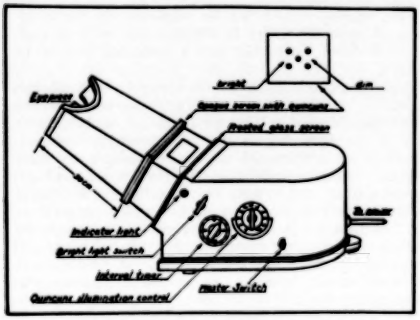

Fig. 1.—Schematic representation of the biophotometer.

The bulbs for producing the bright and the dim light are housed within the instrument. The switch in the upper left corner controls the bright light, the dim light and the quincunx screen. When the switch is turned fully forward, the quincunx screen is swung out of the line of vision and the bright light is turned on. Looking into the eyepiece, one sees the frosted glass screen. This screen is illuminated by a 100 watt "daylight" bulb, maintained at a constant intensity of illumination. The light value at the end of the eyepiece is 1.1 foot candles. When the same switch is turned fully backward the quincunx screen is brought into the line of vision, the bright light is turned off and a small bulb is lighted. The light of the small bulb is controlled by a rheostat, the handle of which turns over a numbered dial. As the handle is turned from zero the resistance is increased and the light that passes through the quincunz becomes less intense. When the dial setting is zero, all five of the light spots of the quincunx are visible. As the pointer is turned over the dial and the light becomes dimmer, the two spots on the observer's right disappear. With further turning the middle spot and finally the two spots on the left disappear.

The photometer is equipped with a means for standardizing the voltage used. The distance of the eyes from the light and the quincunx screen is fixed by means of an eyepiece. The quincunx as a whole and the individual holes of the quincunx are larger than in the Birch-Hirschfeld instrument. These changes in the quincunx, together with alteration of the relative intensities of light transmitted through the holes, make the reading easier.

The test may be conducted with a large number of variations. Differences in adaptation may be shown by any one of several technics. A subject who has poor adaptation as shown by one variety of test will have the same abnormality demonstrated by another variety. The selection of one of these procedures to be used as a standard seems highly desirable. The use of such a standard permits comparison of the results of all observers employing it. After trial of many types of variation, a procedure has been chosen which we believe makes a useful standard.

A STANDARD TECHNIC

The photometer is installed in a dark room, which is kept in as nearly absolute darkness as possible throughout the test. Though it is theoretically possible to conduct the test in a lighted room, this is not a practical procedure. Especially with children, a bright light in the room invariably interferes with the test. The eyepiece of the photometer is so shaped that, as the subject looks into the instrument, he can press his head against the soft rubber edge and exclude most extraneous light. It is much less tiring, however, if he is permitted more freedom of motion between readings.

Personal comfort of the subject is considered important. At least between readings, opportunity should be offered for relaxation against a back support. The photometer should be adjusted at an appropriate height for each subject. Any fatigue that may occur to the extent of interfering with the results of the test is not retinal but is in the mental and body processes.

It is necessary that the operator have a source of light in order to read the dial and a time piece. For this purpose a small red light, well shaded, used intermittently as needed, will cause the least amount of interference should some of the light leak around the eyepiece.

The time consumed by the test comprises a total of twenty-three minutes divided into three periods: (1) a ten minute foreperiod in the dark, (2) exposure to the bright light of the photometer for three minutes, and (3) a ten minute period in the dark. Readings are made at the beginning, middle and end of the foreperiod and at the beginning and end of the recovery period, with one or two additional readings in the recovery period between the first and last readings. As soon as the ten minute reading of the foreperiod is made, the subject is exposed to the bright light of the photometer for three minutes. During the time of

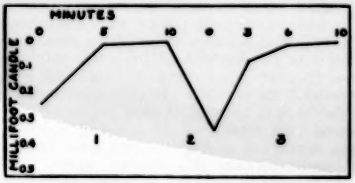

Fig. 2.—Plotted readings of a test of a normal subject: 1, foreperiod; 2, light period; 3, recovery period.

the exposure to the bright light, it is important that the subject keep the head closely against the eyepiece; children may try to look over or under the photometer. Attention should be given that the subject does not close his eyes. Care must be taken that the switch which controls the bright light is completely thrown; otherwise the subject looks at the dim light.

Immediately after exposure to the bright light for three minutes the quincunx screen is thrown into position and a reading is made. The test is completed by

making readings every two and one-half to three minutes for a ten minute period. Readings made more frequently tend to tire the subject, with a possible result of causing the later readings to differ somewhat from those which otherwise would have been obtained.

MAKING READINGS

Readings are made by turning the rheostat handle over the dial until only two spots are seen and then turning it slowly back until the third spot is again just

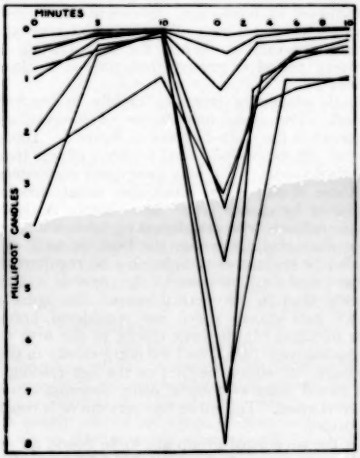

Fig. 3.—Plotted readings indicating the range of values found when a large group is tested.

visible. This is the end point and the dial reading is recorded. In all instances the dial pointer should be turned slowly enough to allow for the lag which occurs between its turning and the ability of the subject to see the spots. Readings should be made, if possible, within thirty seconds; a longer period is tiring and more light may be required to see the spots.

Readings in the foreperiod are more simply made than those in the recovery period. The first reading in the recovery period is an important one and the most difficult to obtain accurately. Considerable practice is required. A very rapid adaptation occurs, which seems to slow down between twenty and thirty seconds from the time the bright light is turned off. The reading should be made between twenty and thirty seconds. For making this first reading in the recovery period the light control is turned slowly from zero until only two spots are seen. If twenty seconds has not elapsed when two spots are seen, it is best to stop turning the rheostat control and to keep inquiring how many spots are seen until the twenty seconds passes. If at twenty seconds the third spot has reappeared, the control should be turned until only two are seen. This procedure eliminates the after-image of the center spot. The point at which only two spots are seen should be found as soon after twenty seconds as possible. The rheostat handle is then turned back to the end point of three spots. The third spot should be plain enough so that the subject is certain it is seen. Blinking or flicker of the spots is sometimes observed. However, if the subject is certain that three spots are seen, the end point has been reached. Flicker is more often present in those who have poor dark-adaptation. As the rheostat handle is turned slowly from zero, the subject will see three or more spots, perhaps, until the dial reads 35, at which point he sees two; but when the handle is turned back until three are seen again, the reading may be 20. Occasionally, individuals are encountered who have more than the usual lag of vision; it may be so marked that several tests must be made if a significant first reading is obtained.

For making readings subsequent to the first one in the recovery period the light control need not be turned back to zero but may be started from the place it was left at the previous reading. The time of the reading is recorded as that of the nearest half-minute at the end of the reading.

COMMENT ON THE READINGS

The intensity of the light transmitted through the center hole of the quincunx is known for all dial readings. The readings in terms of the dial settings are converted to light values in millifoot candles and plotted to make a graphic record. Such a record is shown in figure 2. In this chart the three phases of the test are shown. The plotted points represent the amount of light required to see just three of the five spots of the quincunx. The readings in the foreperiod represent the adaptation in the dark after exposure to the light of chance environment preceding the test. These readings do not have as great significance as those of the recovery period. The chief purpose of the foreperiod is to eliminate the effect of differences in preceding environmental light intensities and to bring all subjects to a more nearly equal basis for the test. The initial reading varies at different times with the same individual, the variation depending on the intensity of the light to which the subject was exposed immediately preceding the test. In some instances the first reading is informative when considered in relation

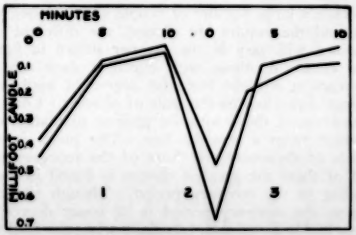

Fig. 4—Two types of borderline curve.

to subsequent readings. Individuals with poor dark adaptation usually require more light for this first reading than do normal subjects. The reading made in the middle of the foreperiod gives some information, but its greatest usefulness lies in the additional opportunity permitted the subject to become accustomed to the procedure before the more critical readings are made. The reading at the end of the ten minute foreperiod is more significant than the readings which precede.

The readings in the recovery period represent the adaptation in the dark after exposure to the experi-

mental light of known and planned intensity. In addition, the first reading in the recovery period offers valuable information concerning the ability of the subject to regenerate visual purple during exposure to the light. During the light period visual purple is being bleached and regenerated at the same time. These two processes come to an equilibrium within three minutes under the conditions of this test. Adequate vitamin A permits rapid regeneration even in the light. If the subject could regenerate visual purple as rapidly as the

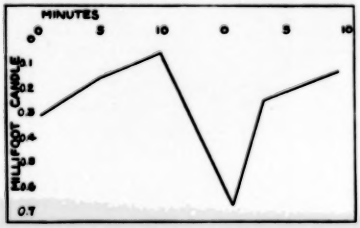

Fig. 5.—Values for a subject who is objectively night blind but who is not aware of night blindness.

light bleaches it, he should require no more light for the first reading in the recovery period than for the last reading in the foreperiod. With the light intensity used in this test no one has yet shown such rapid regeneration, though a few subjects have been encountered who had initial recovery values as low as 0.1 millifoot candle. The first reading in the recovery period represents the resultant of two effects, namely, the bleaching and regeneration of visual purple. Since the intensity of the light and the time of bleaching are the same for all subjects, the difference in this reading with different individuals is a measure of their relative rates of regeneration of visual purple during the stimulus of light. Therefore the reading assumes considerable importance in the evaluation of the results of the test.

When a large number of people are subjected to this test and the results are plotted, the different curves obtained will vary in the manner shown in figure 3. The curves of those with excellent dark adaptation approach a straight line, the degree of approach, of course, depending on the scale of plotting. Conversely, the curves of those with the poorest adaptation depart farthest from a straight line. The most significant points of departure are those of the recovery period, and of these the greatest change is found in the first reading in the recovery period. Though the change late in the recovery period is of lesser degree, it is often highly significant, especially when the final values are greater than 0.1 millifoot candle.

With curves of all degrees of departure from a straight line, an appraisal becomes necessary to determine which are normal and which are not. The appraisal is assisted by noting the type of curve given by those who have been ingesting an abundance of vitamin A. Vitamin A produces improvement in the readings in the direction of a smaller light requirement. However, they improve only to a minimum value which is relatively constant for the same individual but which varies in different individuals. It seems reasonable to consider as normal all results from those known to have had a high intake of vitamin A and who do not have detectable uncorrected ocular defects. From the experience gained with this test up to the present and on the basis stated, we would place the upper limit of normal at 0.6 millifoot candle for the first reading in the recovery period. It is possible that the results obtained subsequent to the ingestion of an abundance of vitamin A are supernormal or high normal and that the range accepted as normal should be increased. It is certain, however, that readings should not be accepted as normal because they are average. Readings which are only slightly greater than those stated as normal are classed as borderline. Somewhat empirically we have set the upper limit of borderline at approximately 1 millifoot candle. When the first reading in the recovery period is greater than this, it is classed as subnormal.

Dark adaptation increases rapidly in the recovery period. The speed and degree of increase may be observed in the plotted curves of figure 3. Those with normal adaptation have final readings of less than 0.05 millifoot candle. The only exceptions encountered are in those instances in which the visual threshold is increased by causes other than vitamin A deficiency. Those subjects who are classed as borderline also may have final readings within the limit of 0.05 millifoot candle, or slightly more light may be required; but in either event the high point of the curve is reached less quickly than in the normal curve. In figure 4 are shown two curves which are considered borderline. One of these has its fault chiefly in the first reading of the recovery period and the other chiefly in the later readings. If either the first or the last readings were considered alone as criteria, many abnormalities would be overlooked. The entire recovery curve is considered important.

In the subnormal group are to be found all degrees of impairment of dark adaptation. Those with lesser degrees of impairment are not subjectively aware of

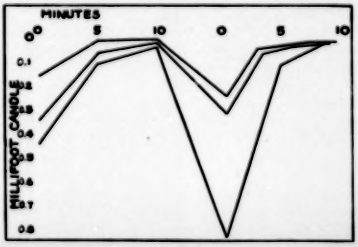

Fig. 6.—Test results showing improvement obtained in ten and sixteen days respectively with 20,000 units of carotene daily.

any difficulty, while others with very poor photometer readings recognize their abnormality. In those with subjective night blindness the first reading in the recovery period may require as much as 7, 8 or more millifoot candles, and at the end of the ten minute recovery period from 0.4 to 0.5 millifoot candle may be required. The latter values represent a state in which the subject is visually quite helpless in the outdoor darkness of night. However, some improvement is to be expected with the lapse of a longer time than the ten minute dark period of the test. A wide zone seems to exist between the curves of those whom we have classed as borderline and the curves of those who

are subjectively aware that their ability to see in the dark is abnormal. This difference may be only apparent rather than real, as the complaint of night blindness usually is not stated unless the difficulty causes a serious handicap. In figure 5 are shown the results of a test of a young adult who does not have any subjective sense of night blindness yet who has been observed objectively by companions to have difficulty in keeping to a path at night which the remainder of the group could see readily. The plotted curve of this subject

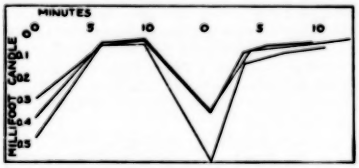

Fig. 7.—Effect of carotene administration to a subject whose original curve was classed as normal.

shows relatively greater departure from the normal in the last than in the first reading of the recovery period. Detailed ophthalmologic examination of this subject revealed nothing more than myopia, which was fully corrected with lenses.

THE PHOTOMETRIC TEST AS A MEASURE OF VITAMIN A DEFICIENCY

Adaptation of the normal eye to darkness depends on the ability to regenerate visual purple, which in turn is related to the presence in the retina of vitamin A or a closely related substance. Consequently, any test that shows relative or absolute capacity for dark adaptation becomes a test for vitamin A deficiency in those with potentially normal eyes. This fact is readily demonstrated by the administration of vitamin A or carotene to those with poor adaptation and no gross uncorrected visual defect. Normal adaptation has been attained repeatedly by this procedure in our study material; one instance is illustrated in figure 6. Even those with normal adaptation may show some improvement when vitamin A is administered. However, in such instances the test results soon reach a point beyond which no further improvement is to be noted. In figure 7 are shown the test results of such a subject.

In order to demonstrate adaptation changes rapidly in our studies, relatively large amounts of concentrated preparations of vitamin A or carotene have been used. When administered in excess in this manner, no difference has been noted between the effects of carotene and those of the fish liver oils. This probably may be accepted as an expected result despite implications in the literature that the vitamin D content of the fish liver oils is a factor in the improvement of dark adaptation.

It is essential to recognize that poor dark adaptation may result from causes wholly unrelated to vitamin A deficiency. In such instances adaptation can be improved by vitamin A therapy only to the extent that the subject is deficient in this vitamin. In figure 8 are shown the test results for three subjects with retinitis pigmentosa, all of whom had been ingesting vitamin A in addition to the usual diet. One of the three curves shows only a moderate divergence from the normal. This is accounted for on the basis that the degenerative change in the retina has not yet affected the fovea in significant degree, an explanation supported by the finding of a vision of 6/6 in both eyes with correction and visual fields of from 15 to 25 degrees for a 5 mm. test object at 120 cm.

With possibly rare exceptions the ocular defects responsible for poor dark adaptation are revealed by ophthalmologic examination. These abnormalities are found with greater frequency in a medical clientele than in the general population. It is believed that, at least among children, the proportion of abnormal test results produced by causes other than vitamin A deficiency is statistically unimportant in surveys made in the general population, especially when those with obvious ocular defects are excluded.

BRIEF TESTS FOR RAPID SURVEYS

Shorter tests than the one described are advantageous at times, especially in large surveys when the total time consumed assumes importance. However, an abbreviated test should be employed only after considerable experience has been acquired in conducting the test in the usual manner. The foreperiod or preliminary period in the dark is considered desirable, but readings during that period are not important except as they accustom the subject to the procedure and thus permit more accurate readings later. Thus, one subject can be waiting in the dark while another is being tested. A reading should be made at the end of the foreperiod and the test continued as already described. If desired, the duration of the test may be reduced still further by decreasing the recovery period to six or seven minutes.

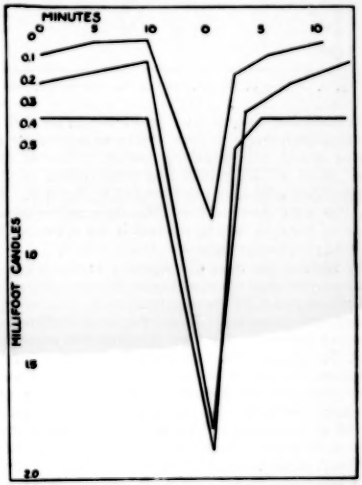

Fig. 8.—Test results of three subjects with retinitis pigmentosa.

The data thus obtained are usually sufficient to show the type of curve and the ability to regenerate visual purple. Subjects who have abnormal readings by any of these procedures should be given the longer test, but normal results usually would not be changed by the longer test. A rapid method of finding subjects with

poor dark adaptation is to make only the first reading in the recovery period; this procedure is not suitable for a survey but serves to find quickly a group of subnormal subjects for experimental study.

EXPERIMENTAL VARIATIONS OF THE TEST

Many variations of the test have been tried in the attempt to determine the most useful procedure. The bright light of the photometer has been altered in intensity by the use of 50, 75, 100, 150 and 500 watt bulbs in turn. Different periods of exposure to the bright light have been used. The distance of the eyes from the quincunx screen has been varied. Different lengths of foreperiod have been tried. The test has been conducted with the omission of the foreperiod.

It was found that illumination more brilliant than that supplied by the 100 watt bulb is frequently uncomfortable. Even the light of the 100 watt bulb is unpleasant to those who have night blindness; some normal subjects report blinking of the eyes for a period of from twenty to thirty seconds. When brilliant illumination is used, the effect is too great and the bleaching of visual purple too intense for a useful test procedure, even when the period of exposure is much shortened. As compared to the more brilliant illumination, the milder effect of the 100 watt lamp permits

Fig. 9.—Results of repeated tests of the same normal subject.

the demonstration of a finer distinction in the difference between individuals in their ability to regenerate visual purple during the bleaching period. The 50 and 75 watt lamps do not produce as much effect as is considered desirable and most useful in the test. When the 100 watt lamp is used, the light intensity at the plane of the eyes during the test is the same as that of the test previously reported.

In varying the time of exposure to the bright light it was found that an equilibrium between degeneration and regeneration of visual purple is reached in approximately two minutes. Thus, the first reading of the recovery period is the same whether the exposure has been for three, four or five minutes and in many instances for two minutes. In order to shorten the time consumed by the test, the original five minute exposure has been shortened to three minutes. The period of three minutes rather than of two minutes was chosen in order to make certain that the critical point has been passed.

It has been found that lengthening the foreperiod beyond ten minutes does not change the results. This finding is important in those instances in which it is desired to keep subjects waiting in the dark for the test.

EXPERIMENTAL ERROR

With almost every biologic procedure, exact duplication of results is difficult and not always to be expected. When the same individual is tested repeatedly with the biophotometer the curves obtained may coincide, but more often slight differences are to be observed. These differences are always greater with the first reading of the recovery period than with subsequent ones. They are greater for those with subnormal than with normal readings. Children offer more difficulties than do adults. They are easily distracted and the presence of more than one child at a time in the dark room often interferes with the test. On one occasion it was found that the waiting child was giving the answers for the child being tested. Especially when working with children under 11 or 12 years of age, more accurate results are obtained by giving a preliminary test as a trial or practice procedure in order to give the subject a general idea of what is desired. Practice not only aids in giving more consistent readings but also in some degree tends to improve them in that slightly less light is required for the end point.

It seems probable that much of the difference that is found in the first reading of the recovery period with successive tests on the same subject is to be explained on the basis of timing of the reading. The technic permits a variation of ten seconds in obtaining this reading. This variation is at a time when adaptation is occurring at a rapid rate. Despite the factors that have been mentioned, the variations in the first recovery reading are small for normal subjects. For subjects in whom adaptation is subnormal the first recovery reading tends to be more variable, but it remains subnormal.

For the final reading of the recovery period the time consumed in making the test is relatively unimportant. The variations are within a narrow range for normal subjects. The percentage of variation may be large, as for example from 0.01 to 0.03 millifoot candle as shown for the subject of figure 9, but this variation, when charted, appears small. As with the other readings of the test, the final recovery reading shows greater variation in those with subnormal adaptation, though the differences are not as great as in the first reading of the recovery period.

Figure 9 illustrates the results of successive tests of a boy of 11 years over a period of three months. This case is selected only because of the larger number of observations on the same individual. The subject was receiving a diet relatively low in vitamin A with no supplemental source of this material. Despite the variations found, the readings are within normal limits in all instances.

Occasionally are encountered bizarre curves or curves which do not conform to the expected or usual contours. Explanation for these usually is not difficult. An emotional disturbance, such as fear of the dark, causes wholly unreliable results. A desire to please, which leads to guessing or to giving hasty answers, is quickly detected. The closing of the eyes during exposure to the bright light is usually indicated by the shape of the curve. Illness or indisposition affects the results adversely. Some young children have difficulty in making a decision as to what they see and the results are not dependable. Increased experience in giving the test tends to eliminate errors from these various sources. It is believed that, when the technic is carefully followed and allowance is made for such disturbing factors as have been mentioned, the experimental error is not great enough to interfere with proper interpretation of the test results.

COMPARISON OF THE PRESENT TEST WITH ONE PREVIOUSLY REPORTED

The principle on which the previously reported test [1] was based is the same as that of the present test. The results of continued observation indicate that this principle is sound. Further study by means of the new photometer permits a clearer picture of the phenomena involved, and in the light of this newer information certain defects of the older test become evident.

The Birch-Hirschfeld photometer of the old test and the biophotometer of the new test have different characteristics. The Birch-Hirschfeld instrument is more complicated in that both the wedge and the diaphragm must be manipulated to make a reading. These procedures permit an exact reading within the range of the instrument, but they require an amount of time considerably greater than for a reading with the new photometer. The time required to make the first reading in the recovery period is highly important if this reading is to have significance. When the Birch-Hirschfeld readings are compared with those of the biophotometer in terms of light values, it becomes apparent that adaptation has advanced to a marked degree by the time the first reading of the recovery period is made with the Birch-Hirschfeld instrument. Thus a subject who is classed as borderline or moderately subnormal by the new test because of the first recovery reading may appear normal by the old test. This discrepancy has been observed in several instances in which the two tests were applied to the same subject. When the first recovery reading is poor by the Birch-Hirschfeld instrument, however, it is still poorer by the biophotometer. Thus the biophotometer reveals a higher proportion of moderately subnormal subjects than the Birch-Hirschfeld instrument.

When the final readings of the recovery period are obtained by the two photometers and compared in the same manner, it appears that the readings agree within the range of experimental error, since the time factor in making this reading is not so important as for preceding readings. Such differences as occur are to be explained in a large measure by the finer gradations of measurement permitted by the new than by the old photometer. The changes in the amount of transmitted light are by relatively gross steps in the Birch-Hirschfeld instrument. It has been brought out elsewhere in this publication that subjects who are classed as borderline or moderately subnormal often have final readings within the normal range, the divergence from normal being in the earlier readings. Thus dependence on the final readings alone would cause to be missed many abnormal individuals. If the final reading is poor, however, it is significant even when considered alone.

Several statements in our first publication on this subject may be interpreted as attaching importance to the amount of the difference between the first and the last readings. From the discussion of the new test in this publication it becomes obvious that the greater differences between the first and last readings of the recovery period are shown by those with subnormal adaptation.

A REVIEW OF OUR FORMER SURVEYS

The data of our former surveys have been reviewed in the light of more recently acquired information and experience. With only two exceptions the final readings of all the children were definitely poor when the first reading was poor; in these two the final readings were borderline. Consequently little error seems to be introduced into these data by the omission of the first readings and by consideration of only the final ones. When the distinction between normal and abnormal is rather finely made, the results are essentially identical with those which were reported. When a larger and perhaps more reasonable degree of experimental error is allowed, the proportion of children with definitely subnormal adaptation becomes 10 per cent less in each instance. For example, the 26 per cent subnormal stated for the rural group becomes 16 per cent and the proportion of borderline cases increases from 10 to 20 per cent. It is to be recognized that if these figures are acceptable at all they must be considered as minimum, because abnormality is often missed when only final readings are used as the basis of classification. Whatever incidence of vitamin A deficiency may finally be determined for the population of this country, it seems clear to us that it is greater than has been heretofore generally assumed.

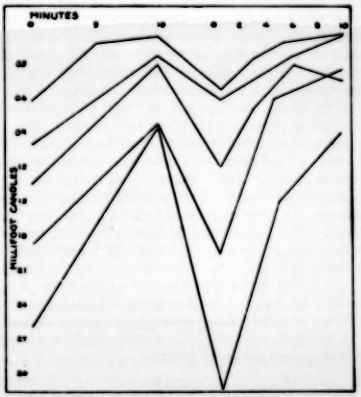

Fig. 10.—Results of successive tests of a boy who originally had a subnormal curve but whose test results became approximately normal while he was receiving a diet containing 3,000 units of vitamin A.

SURVEYS AMONG CHILDREN

Much intensive study has been made of the new technic now being reported and several hundred children and adults have been tested, some of them many times. The objective has been the perfection of the test and a study of its usefulness. Of the many individuals tested, only two small groups can be considered as representing controlled surveys.

During the latter part of August and the early part of September 1936, while the test was being studied with orphanage children as subjects, it was applied to twenty-three children who were living together in the same cottage and who can be considered as comprising an unselected group as far as the orphanage is concerned. Of these twenty-three children eight, or 34 per cent, had subnormal test results.

In the month of October 1936, thirty-seven children of the third and fourth grades of a local school were examined. These children ranged in age from 7 to 10 years. Those who had abnormal or peculiar results were retested, the number retested being fifteen. It was found that one child had very poor and six had

poor dark adaptation; two gave results classed as borderline. Thus 76 per cent of the children gave normal results and 24 per cent did not. The children with poor photometric readings were given vitamin A under supervision at school. At the time this is written the children have been receiving vitamin A for a period of one month. All except three have attained normal test readings. The three who have not yet responded have had careful and expert ophthalmologic examination, and no organic cause for poor dark adaptation has been found. It is tentatively assumed that ultimate recovery will occur.

THE VITAMIN A REQUIREMENT

A few observations have been made in an attempt to determine the vitamin A requirement. Several children with poor dark adaptation were placed under care in the hospital metabolism ward and given a controlled and measured diet which permitted a daily intake of from 5,000 to 6,000 units of vitamin A. These children promptly improved in their adaptation ability and had normal photometric tests. On another occasion two children, 11 years of age, were placed under similar care and given a diet which permitted the daily ingestion of 3,000 units of vitamin A. The one child who had a normal test in the beginning continued normal during three months of this regimen (fig. 9). The other child, subnormal in the beginning, had approximately normal tests after two months (fig. 10). Thus for these two children it may be concluded that 3,000 units of vitamin A is adequate when the photometric test is used as the criterion. For the first diet, which contained from 5,000 to 6,000 units, the amount of vitamin A was estimated, though the food was measured. This diet simulated closely the diet regularly received by our hospital children except that it contained no concentrated source of vitamin A. For the diet that contained 3,000 units the amount of vitamin A was determined by assay. It is recognized that the group of children studied is too small to permit conclusions as to a general applicability of the observations, but nevertheless they seem of interest.

SUMMARY

A new photometer and a technic for its use in the determination of ability to adapt to darkness have been developed.

The intensity of the light with which the photometric readings are made is controlled by a rheostat, which is calibrated in terms of millifoot candles; this permits the results of one investigator to be compared with those of another, a procedure generally difficult for dark adaptation tests.

Evidence has been obtained for considering the test a useful means for detecting vitamin A deficiency.

Comparison of the results with the new technic with those of our formerly reported procedure shows certain defects of the old test, though the principle on which it was based seems sound.

Of twenty-three children of an orphanage eight, or 35 per cent, had abnormal test results by the new technic. A survey of a group of thirty-seven local school children showed 19 per cent to be subnormal and 5 per cent borderline. These results confirm those of the previously reported survey in that they indicate that vitamin A deficiency is more frequent than has been generally assumed.

Observations on two boys 11 years of age indicate that vitamin A in the amount of 3,000 units daily meets their requirements as judged by the photometric test.

KETO-CHOLANIC ACIDS IN THE MEDICAL MANAGEMENT OF LOW GRADE GALLBLADDER DISEASE

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The rôle of gallbladder disease in the production of upper abdominal distress and of "dyspeptic" complaints is well recognized. Blackford and Dwyer [1] in 1924, reporting a series of 1,650 cases presenting gastric symptoms, found that the organic pathologic condition of the abdomen causing the "dyspepsia" involved the gallbladder in 52 per cent of the cases. Crump [2] in 1931, reporting a series of 1,000 routine postmortem examinations, found signs of chronic and healed cholecystitis in 300 cases. He concludes that upward of 40 per cent of the adult population have disorders of the biliary system.

Despite the widespread frequency of chronic cholecystitis, the principles of therapy are highly controversial. Judd, Crisp and Waldron [3] state that, according to the present conception of chronic cholecystic disease, some change in the gallbladder wall represents the seat of the trouble and that removal of the organ is the only way to eradicate the primary factor. They conclude that almost all cases, especially those presenting stones, constitute a surgical problem. The fact remains however that, according to Stanton,[4] in approximately one third of all operations undertaken for the relief of symptoms diagnosed as of gallbladder origin no stones are found. Furthermore, in Stanton's series of ninety stoneless cases followed for an average of three and one-half years after cholecystectomy, there was no demonstrable effect on the morbidity in 47 per cent of the cases. These figures compare favorably with those reported by other investigators.

Innumerable methods of medical management have been proposed—the Lyon duodenal drainage, the dietary regimen and others. Rehfuss and Nelson [5] go so far as to state that the demonstration of gallbladder disease by physical examination, cholecystogram or duodenal drainage is an indication for the low fat, low cholesterol dietary management. Magnesium sulfate as a cholagogue, vegetable cholagogues such as emodin, disinfectants supposedly eliminated in the bile such as salicylates and hexamines, and various decholesterolizing substances have all been suggested. Restriction of fats in conjunction with cathartic medication is the commonly employed form of therapy. Under such managements we have found that the patients feel better for a while, but sooner or later a recurrence of the gallbladder syndrome is ushered in after a period of loss of weight, loss of strength, and the appearance of symptoms of a markedly irritable bowel.

1. Blackford, J. M., and Dwyer, M. F.: Gastric Symptoms, with Particular Reference to Gallbladder Disease, J. A. M. A. **83**: 412 (Aug. 9) 1924.
2. Crump, Curtis: Incidence of Gallstones and Gallbladder Disease, Surg., Gynec. & Obst. **53**: 447 (Oct.) 1931.
3. Judd, E. S.; Crisp, N. W., and Waldron, G. W., in Christopher, Frederick: Textbook of Surgery, Philadelphia, W. B. Saunders Company, 1936, p. 1214.
4. Stanton, E. M.: The Stoneless Gallbladder, Am. J. Surg. **18**: 246 (Nov.) 1932.
5. Rehfuss, M. E., and Nelson, G. M.: The Medical Treatment of Gallbladder Disease, Philadelphia, W. B. Saunders Company, 1935, p. 294.

Opinions differ as to the mechanisms involved in the production of the typical syndrome of chronic gallbladder disease. Bile stasis appears to be one of the chief physiologic manifestations of inflammatory changes in the gallbladder mucosa. German clinicians especially emphasize stasis of bile as the causative factor producing the characteristic symptoms in the absence of mechanical obstruction due to the presence of stones. The recent and extensive work of Andrews and Henry [6] on the bacteriology of normal and diseased gallbladders supports the stagnation hypothesis. These investigators suggest that bacteria may play but a secondary rôle in gallbladder disease and that more careful study be given to the possible primary factors, which might be mechanical, vascular, toxic or chemical.

Stasis has been attributed to a variety of causes. It is believed that an inflammatory process may result in the stagnation of bile in the gallbladder or biliary passages. These changes may vary from simple catarrhal inflammation to active infection with specific organisms. Mechanical irritation due to the presence of stones may give rise to all types of inflammation of the gallbladder wall. Metabolic disturbances may produce alterations in the physical and chemical properties of bile, impeding its free flow. The sedentary life and the asthenic habitus have been considered by some as etiologic causes of muscular atonia of the gallbladder wall which impairs normal emptying.

Objectively, roentgenologic examination comprises the chief method of studying the gallbladder. There are three possible factors in general, exclusive of failures in roentgen technic, which may account for nonvisualization: (1) failure of the gallbladder to concentrate the dye, because of a pathologic condition of the wall; (2) failure of the dye to reach the gallbladder, because of obstruction of the cystic duct with calculi, and (3) the concomitant pathologic condition of the liver, resulting in the deficient secretion of bile. Regardless of which factor may be considered primary, stasis of bile would be the inevitable result.

From all available evidence, therefore, the rationale of treatment of chronic gallbladder disease should consist in eliminating bile stasis. Certainly little is accomplished toward this end by continuing the use of the almost traditionally accepted low fat dietary and cathartic management. It logically follows that, in the absence of acute mechanical obstruction or acute inflammation, a treatment designed to increase the flow of bile would mediate at least one of the causes of the difficulty.

In 1924 one of us (C. F. G. B.) began giving cream, butter and in some instances eggs, plus a diet of frequent feedings of high smooth bulk, together with antispasmodics, to patients with low grade gallbladder disease. Cooked fats or so-called greases were absolutely curtailed. The results proved satisfactory and the policy was continued. The patients who responded best were those who had previously been on the restricted unbalanced diet considered correct for gallbladder disease. Those who continued to show more severe symptoms and signs were sent to the surgical department in good general condition.

During this preliminary study, many bile salts with or without cathartics were used on control patients. These either became worse clinically than the patients given the diet plus antispasmodics or remained unchanged until we began using keto-cholanic acids three years ago. The use of keto-cholanic acids as an adjunct to our previous dietary management was suggested by K. K. Jones [7] on the basis of its action in stimulating a flow of hepatic bile.

The choleretic effect [8] of the bile acids is now well established. Thus far, however, their usage has been confined chiefly to the laboratory, and little attempt has been made to utilize them clinically. On the basis of their physiologic activity, various forms of bile salts have been used by Copher, Woodmansee and Moore,[9] Whitaker [10] and others in an attempt to accelerate the appearance of the gallbladder shadow in cholecystography. Graham, Copher and Moore [11] conclude that bile salts are not satisfactory for this purpose. More recent work by Jankelson and Altman [12] would indicate that the matter is still an open issue.

Of the various cholic acid derivatives employed both experimentally and clinically, the keto-cholanic acids, the oxidation products of the natural bile acids, have been shown to have the lowest toxicity.[13] They are apparently the only bile salt preparations that may be administered intravenously in man. The increase in the flow of liver bile following the use of this substance is claimed to be from 100 to 200 per cent.[14] In determining the relative toxicity of different bile salts on the gallbladder of the normal dog, Andrews and Aronsohn found that the most severe reactions resulted from the use of desoxycholic acid. Taurocholic acid, apocholic and cholic acid, and hydrolyzed bile salts produced less marked but severely toxic reactions.

We believe that the use of keto-cholanic acids in conjunction with a frequent feeding, high fat, dietary regimen achieves a twofold action. First, the direct stimulation to the flow of liver bile as obtained by the administration of keto-cholanic acids results in the increased activity of the entire biliary apparatus as well as the gallbladder. Second, the physiologic action of fat in initiating contraction and emptying of the gallbladder is obtained. Theoretically, the resulting increased flow of bile through the gallbladder should exert a mechanical flushing action and result in drainage of the biliary tract.

METHODS AND MATERIAL

Patients were selected for this study who had been observed and treated for upper abdominal distress for varying periods of time. All of this group underwent routine cholecystographic examination and those who showed dysfunction were accepted for the series. New patients entering the clinic during the study with symptoms referable to the gallbladder were similarly treated. In addition to the foregoing group of patients, who were seen in the gastro-intestinal clinic of St. Luke's Hos-

6. Andrews, Edmund, and Henry, Lucy D.: Bacteriology of Normal and Diseased Gallbladders, Arch. Int. Med. **56**: 1171 (Dec.) 1935.

7. Jones, K. K.: Personal communication to the authors, January 1933.

8. Both Graham and Rehfuss and their co-workers distinguish between choleretics and cholagogues. The former term includes those substances, chiefly the bile acids, which increase the flow of bile by directly stimulating the liver to secrete more bile. The cholagogues are those substances which increase the flow of bile by inducing emptying of the gallbladder.

9. Copher, G. H.; Woodmansee, A. D., and Moore, Sherwood: Unpublished work cited in Graham, E. A.; Cole, W. H.; Copher, G. H., and Moore, Sherwood: Diseases of the Gallbladder and Bile Ducts, Philadelphia, Lea and Febiger, 1928, p. 103.

10. Whitaker, L. R.; Edson, P. J., and Sosman, M. C.: Clinical and Experimental Cholecystography, Am. J. Roentgenol. **14**: 495 (Dec.) 1925.

11. Graham, Cole, Copher and Moore: Diseases of the Gallbladder and Bile Ducts, p. 102.

12. Jankelson, I. R., and Altman, W. S.: Decholin Sodium in Cholecystography, New England J. Med. **208**: 796 (April 14) 1932.

13. Gilbert, E.: Choleresis and Choleretics: A Contribution to the Physiology of Bile: V. The Toxicity of Bile Acids, Ztschr. f. d. ges. exper. Med. **52**: 779, 1926. Andrews, Edmund, and Aronsohn, H. G.: Relative Toxicity of Different Bile Salts on the Normal Gallbladder, Proc. Soc. Exper. Biol. & Med. **34**: 765 (June) 1936.

14. Neubauer, E.: The Cholagogic Effect of Dehydrocholic Acid in Man, Klin. Wchnschr. **3**: 883 (May 13) 1924.

pital Outpatient Department, a second group was studied in cooperation with Drs. Franklin S. Wilson and S. P. Cromer at the University of Illinois Research Hospital. Similar methods of study and treatment were employed in the two clinics. All patients were ambulatory during the study. This report deals with the results obtained in the treatment of sixty-five cases of chronic cholecystitis by the methods here described.

Four general roentgen classifications were made for the purpose of the investigation: (1) nonvisualizing gallbladders with no roentgen evidence of stones, (2) nonvisualizing gallbladders with stones, (3) normally visualizing gallbladders with stones, (4) gallbladders manifesting delayed emptying.

All patients were followed at frequent intervals by cholecystographic examination. This objective evidence, together with subjective changes, constituted the two criteria of evaluation of the results of therapy used in this investigation. The original groups were reclassified after treatment according to (1) both subjective and roentgenologic improvement, (2) subjective but no roentgen improvement, (3) roentgen but no subjective improvement, (4) no improvement, either subjective or roentgenologic.

In order to control the study properly, seven variations in therapy were employed: (1) hourly feedings and antispasmodics, (2) hourly feedings and keto-cholanic acids, (3) hourly feedings, keto-cholanic acids and antispasmodics, (4) bland diet and keto-cholanic acids, (5) bland diet, keto-cholanic acids and antispasmodics, (6) low fat, low cholesterol diet only, (7) low fat, low cholesterol diet, keto-cholanic acids and antispasmodics.

The keto-cholanic acids[15] used in this experiment consisted of a mixture of 3, 7, 12 triketocholanic acid, 3, 12 diketocholanic acid, 3 keto-cholanic acid and 3, 7 diketocholanic acid. The mixture of the foregoing keto-cholanic acid contained the oxidation products of all the natural bile acids found in human bile in their normal proportions. Administration was orally in the form of 3¼ grain (0.24 Gm.) tablets. One tablet was given three times a day, making a daily dosage of 11¼ grains (0.72 Gm.). In four patients in whom no improvement in visualization was observed following sixty days of this medication, the dosage was doubled.

15. The keto-cholanic acids used in this investigation were especially prepared for us and furnished by G. D. Searle & Co., Chicago.

The various dietary managements employed were those used as a routine in the clinic. The hourly feeding schedule was identical with that prescribed as a routine in the management of peptic ulcer.

RESULTS

The results of this study appear in the accompanying table. Two hundred and twenty-one gallbladder visualizations were performed on a total of 131 patients in the course of this investigation. Sixty-five patients were accepted for the series.

It will be seen that the most consistent subjective improvement occurred in those patients receiving the keto-cholanic acids. In the majority of instances the subjective improvement was found to parallel the objective improvement, as revealed by repeated cholecystographic examination. The exceptions to this general observation were those patients in whom large stones had been demonstrated. These patients manifested marked improvement subjectively, but little change could be observed roentgenologically. In some cases in which multiple small stones were reported, the roentgen report on the first examination was nonvisualization. Following the dietary and keto-cholanic acid therapy, the gallbladders were found to visualize and the filling defects due to stones were noted at this time.

In a few cases in which stones were reported on the first Graham-Cole test, they were not in evidence on succeeding visualizations, following keto-cholanic acid therapy. The chief point to be emphasized, however, is the marked subjective improvement with concomitant roentgen improvement in so many cases.

No adverse results were obtained in any of the groups receiving the keto-cholanic acids. Only four patients in the series failed to improve subjectively. Three of the patients with nonvisualizing gallbladders had normally visualizing gallbladders after therapy. Interesting results were obtained with those patients who gave histories of frequent repeated attacks of typical gallbladder colic. After approximately two weeks of therapy the attacks would decrease in severity and frequency and gradually disappear.

In three instances untoward results were obtained when we began the hourly feedings of milk and cream and the keto-cholanic acids simultaneously. One patient reported increased distress with pain in the upper right

Response to Various Forms of Therapy

Roentgen Classification	Results of Therapy	Types of Therapy*						
		I	II	III	IV	V	VI	VII
Nonvisualizing gallbladders, no stones	Number of patients	5	8	6	4	2	7	..
	Subjective improvement	4	8	5	3	2	3	..
	Roentgen improvement	3	5	6	1	1	2	..
	Both subjective and roentgen improvement	3	5	5	1	1	1	..
Nonvisualizing gallbladders, with stones	Number of patients	2	3	4	6	..	5	1
	Subjective improvement	1	3	4	6	..	2	1
	Roentgen improvement	0	2	3	0	..	0	1
	Both subjective and roentgen improvement	0	2	3	0	..	0	1
Normally visualizing gallbladders, with stones	Number of patients	..	3	1	3	1	2	..
	Subjective improvement	..	3	1	2	1	1	..
	Roentgen improvement	..	1	1	1	1	0	..
	Both subjective and roentgen improvement	..	1	1	1	1	0	..
Normally visualizing, but delayed emptying, no stones	Number of patients	..	..	..	..	2	..	..
	Subjective improvement	..	..	..	..	2	..	..
	Roentgen improvement	..	..	..	..	2	..	..
	Both subjective and roentgen improvement	..	..	..	..	2	..	..

* I indicates hourly feedings and antispasmodics; II, hourly feedings and keto-cholanic acid; III, hourly feedings, keto-cholanic acid and antispasmodics; IV, bland diet and keto-cholanic acid; V, bland diet, keto-cholanic acid and antispasmodics; VI, low fat, low cholesterol diet only; VII, low fat, low cholesterol diet, keto-cholanic acid and antispasmodics.

quadrant, distention and the like. These symptoms subsided after changing to the bland diet. In two patients, typical attacks of colic resulted. One of these patients who was under observation at the University of Illinois reported an attack of colic two days after the combined keto-cholanic acid and hourly feeding therapy was begun. The attack was followed by a slight diarrhea, during which the patient felt some granular material in the stool. Some of the granules, varying from 2 to 4 mm. in diameter, were recovered by the patient and brought to the clinic. Examination by the pathology laboratory revealed these to be typical faceted cholesterol stones.

COMMENT

While we have employed cholecystography as the chief objective criterion of improvement in this investigation, we realize its limitations. The problems of roentgen interpretation and methods are almost as controversial as the status of cholecystifis. There is little doubt, however, that cholecystography is the best objective method of study that is available.[16]

The need for care in interpreting roentgen improvement was indicated by the work of Lahey and Jordan.[17] They found that in 44 per cent of a series of sixty-five cases of cholecystitis, also manifesting signs of colon irritability, the gallbladder would fill normally after from five to ten days of bowel management, whereas with the same intravenous dye technic it had previously shown an absence or an inadequate filling.

No conclusions can be drawn at this time as to the proper interpretation of the roentgen improvement in the visualization of the gallbladders of the patients receiving the keto-cholanic acids. The roentgen changes may be the result of an actual increased activity of the gallbladder due to improvement in the pathologic gallbladder wall. On the other hand, since the liver cells are directly stimulated to secrete, more bile passes through the biliary apparatus, probably because of improved mechanical flow resulting from the increased amount of bile from the liver itself. The consistent improvement manifested by the keto-cholanic acid series and the lack of improvement in the control series must be considered significant.

Regardless of the objective signs of improvement, various aspects of which are controversial, the consistent subjective improvement remains quite definite. The patients almost uniformly obtained relief not attainable on principles of gallbladder management previously laid down. Relief from "dyspeptic" distress, cessation of colic, weight gains and the like were striking.

Care must be exerted, however, in selecting patients and in carrying out the combined keto-cholanic acid and high fat dietary therapy. This form of management is distinctly contraindicated in cases of either common duct obstruction or acute cholecystitis. We recommend the gradual introduction of the management rather than beginning all measures abruptly. If, for example, a patient has been maintained on a low fat, low cholesterol dietary regimen, the same diet should be continued and the keto-cholanic acids (3¼ grains three times a day, after eating) begun. As the patient responds, the diet is gradually liberalized, being changed to a bland general diet and ultimately to the hourly feedings of milk and cream.

Failure to improve clinically, as manifested by continued pain, jaundice and repeated colic, after a reasonable trial period of the foregoing management definitely indicates surgical intervention. Although we have included all forms of pathologic changes termed chronic cholecystitis in this series, we have not as yet referred a single case to surgery.

CONCLUSIONS

We find no justification in continuing the use of low fat, low cholesterol dietary management in the treatment of low grade gallbladder disease except in a few special cases. We recommend keto-cholanic acids to stimulate the flow of hepatic bile, hourly feedings of milk and cream to stimulate emptying of the gallbladder, and antispasmodic medication. This was found to be the most effective type of therapy in our series from the standpoint of objective and subjective improvement in cases of chronic cholecystitis. We believe that this form of therapy is distinctly contraindicated in cases of common duct obstruction and acute cholecystitis.

122 South Michigan Avenue.

16. Case, J. T.: The Relative Value of Cholecystography and the So-Called Direct and Indirect Methods of Roentgenological Examination of the Gallbladder, Am. J. Roentgenol. **16**: 238 (Sept.) 1926. Ferguson, A. N., and Palmer, W. L.: Cholecystography: Its Clinical Evaluation; Study of 2,070 Cases, J. A. M. A. **100**: 809 (March 18) 1933.

17. Lahey, F. H., and Jordan, S. M.: Management of Biliary Tract Disease, Am. J. Surg. **11**: 1 (Jan.) 1931.

ENCEPHALOGRAPHY WITH ETHYLENE

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The very considerable discomfort following encephalography by the lumbar route has been a potent factor in limiting the application of this diagnostic procedure. One can look for the most help from encephalography in those cases in which a suspicion rather than a certainty of intracranial disorders exists, yet one is often loath in such cases to subject the patient to the protracted and severe headache which almost invariably follows the procedure. Thus any modification of technic that will serve to lessen the unpleasantness of encephalography will be effective in increasing its scope of usefulness.

General anesthesia, either parenterally or by inhalation,[1] is successful in overcoming the headache incidental to the injection of the air but can have no effect on the pain of the succeeding hours and days. It has the disadvantage of masking the signs of untoward sequelae, thus preventing the prompt institution of necessary therapeutic measures.

Elsberg and Southerland [2] felt that there was a definite connection between the presence of air in the lateral ventricles and the third ventricle and the production of postinjection headache, although they did find a small amount of air persisting in these localities after the headache had disappeared. They believed that increased spinal fluid pressure could be ruled out as an etiologic agent, since they found the pressure to be from 2 to 12 cm. less after the injection than before. Tschugunoff,[3] however, found a definite increase in pressure after encephalography. I have been unable

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Read before the Section on Nervous and Mental Diseases at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

1. Waggoner, R. W., and Himler, L. E.: Encephalography Under Nitrous Oxide Anesthesia, Am. J. Roentgenol. **31**: 784 (June) 1934.

2. Elsberg, C. A., and Southerland, R. W.: Etiology of Headache: I. Headache Produced by Injection of Air for Encephalography, Bull. Neurol. Inst., New York **3**: 519 (March) 1934.

3. Tschugunoff, S. A.: Modifications of Cerebrospinal Fluid as a Result of Diagnostic Encephalography, Ztschr. f. d. ges. Neurol. & Psychiat. **122**: 452, 1929.

to find any report of serial pressure readings at intervals after encephalography that would warrant an authoritative opinion as to the course of the spinal fluid pressure during the period of intense headache.

Although ordinary room air is most frequently used for encephalography, other gases have been offered as substitutes from time to time, without, however, any very definite claims of advantage. Liberson [4] found carbon dioxide to be absorbed too rapidly for proper visualization. Nitrogen showed no superiority to filtered air, but he felt that helium possessed slight advantages over either. Zeller [5] employed the insufflation of acetylene as a therapeutic measure in meningitis but was not concerned with the visualization of the ventricular system.

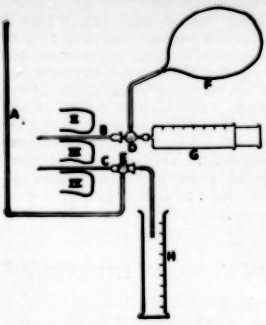

Fig. 1—Diagram of apparatus used for encephalography. *A*, manometer; *B*, lumbar puncture needle; *C*, lumbar puncture needle with valve and side arm; *D*, three-way valve; *E*, valve to side arm of lower needle; *F*, rubber bladder filled with ethylene at atmospheric pressure; *G*, 50 cc. syringe; *H*, graduate into which spinal fluid is drained.

The use of anesthetic gases for encephalography was first proposed by Aird [6] in 1934, when he reported an experimental series in dogs. The advantages he hoped to gain were twofold: anesthesia or analgesia from the local action of the injected gas, and more rapid absorption of the gas. In the employment of nitrous oxide and ethylene he felt that he accomplished both of these objectives without adding to the hazards of the procedure. He has shown definitely that absorption is more rapid, as the gas disappeared from the ventricles in but one hour with nitrous oxide as compared with seven days with air. His criteria of production of analgesia are less definite, as the animals were subjected to moderate doses of morphine or amytal before the encephalography, while at best the evaluation of the amount of headache suffered by a dog must be rather difficult. Aird felt, however, that definite analgesia was produced both by nitrous oxide and by ethylene.

So favorable was the experimental trial of these two gases that in March 1934, a month after Aird's report, I did my first encephalography with nitrous oxide in man.

I have utilized as a routine two lumbar punctures for encephalography, allowing the fluid to escape into a graduated cylinder from the lower needle, which is provided with a side arm for connection with a water manometer. The upper needle is provided with a three-way valve, one arm connecting with the bore of the needle, the second with a sterile rubber bladder containing the gas to be injected, and the third with a 50 cc. syringe. By manipulation of the valve, gas may be drawn into the syringe from the gas bladder and expelled through the needle into the subarachnoid space. My aim has been to maintain a relatively constant spinal fluid pressure rather than to attempt a volume for volume replacement. Fluid is allowed to flow out of the lower needle in 10 cc. portions, following each of which gas is injected to bring the pressure in the manometer up near the original value. This is the only feasible method in which readily soluble gases are used, since frequently in order to maintain a constant pressure it is necessary for the amount of gas injected to exceed the amount of fluid removed by as much as 50 per cent, owing to solution of the gas during the injection.

Eight encephalographies were done with nitrous oxide. The radiologic results were good in three, fair in four and poor in one. Filling of the ventricles was generally satisfactory, but so rapid was the absorption of the gas from the subarachnoid channels that they were very poorly visualized.

Since nitrous oxide was absorbed too rapidly for good radiologic results, it was decided to change to ethylene, which, as can be seen from table 1,[7] is only one-fifth as soluble as nitrous oxide although still seven times as soluble as air.

To date I have done thirty encephalographies with ethylene. In twenty-four of these the visualization of the ventricles and subarachnoid channels has been excellent, in five only fair and in one poor. In this case, however, a subsequent trial with air yielded no better results. A survey of 189 encephalographies done with air showed no higher percentage of satisfactory results. Because of the fairly prompt disappearance of subarachnoid ethylene, it is essential that the x-ray examination be made immediately following the injection, as a delay of as little as fifteen minutes may result in poor visualization. This necessity for expedition will, however, be appreciated by the patient, who consequently is returned more promptly to his bed.

TABLE 1.—*Solubility of Gases in Water at 20 Degrees Centigrade* [7]

Air	0.01826
Nitrogen	0.0151
Oxygen	0.031
Nitrous oxide	0.67
Carbon dioxide	0.878
Ethylene	0.122

TABLE 2.—*Distribution of Cases in Which Encephalography with Ethylene and Nitrous Oxide was Performed*

Epilepsy	23
Brain tumor	4
Head trauma	3
Vascular accident	2
Psychosis	2
Narcolepsy	1
Neurosyphilis	1
Mental deficiency	1
Hysteria	1
Total	38

The headache complained of during the injection of the gas did not, in my opinion, differ in kind or degree from that experienced by patients in whom air was injected. Naturally, no exact measure of this symptom was possible, and clinical observation was my only aid in judgment. Nevertheless, it is probable that I was

4. Liberson, F.: Use of Various Gases in Encephalography, Am. J. M. Sc. **185**: 47 (April) 1933.
5. Zeller, O.: Acetylene Insufflation in Meningitis, München. méd. Wchnschr. **82**: 47 (Jan. 10) 1935.
6. Aird, R. B.: Experimental Encephalography with Various Anesthetic Gases, Proc. Soc. Exper. Biol. & Med. **31**: 715 (March) 1934.
7. Seidell, A.: Solubilities of Inorganic and Organic Compounds, ed. 2, New York, D. Van Nostrand Company, Inc., 1919.

able to judge the degree of discomfort of these human subjects more accurately than would have been the case with semianesthetized dogs. I must therefore state that I cannot, in man, confirm Aird's finding of definite anesthesia or analgesia produced by injection of ethylene.

After the injection, however, the condition of the patient presented a striking contrast to that seen after

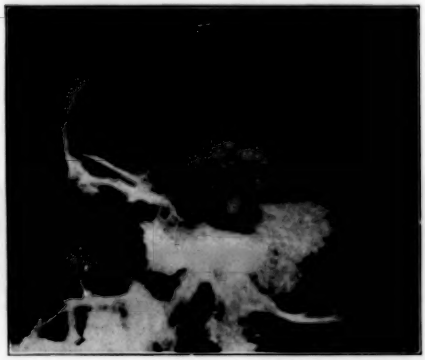

Fig. 2.—Encephalogram after removal of 100 cc. of spinal fluid and replacement with approximately 150 cc. of ethylene.

the use of air. Most of the patients were quite comfortable within three or four hours, able to eat the evening meal, and in almost every instance to be up and about the following day. The average period of hospitalization following the procedure was reduced from three days when air was used to 1.85 days with ethylene, while the condition of the patients on dismissal was in general better than after the longer period with air. That this shorter period of recovery from headache is due to the more rapid absorption of ethylene seems most probable. I believe that the solubility of the gas, and not its anesthetic properties, is responsible for its advantage over air.

It is generally stated that although air in the subarachnoid space may be absorbed within twenty-four hours [8] ventricular air is present at least three days [9] and may at times be seen nine days [8] after the injection. I have seen a case in which twenty-one days after the injection of a large volume of air it could still be observed in the ventricular system.

Serial x-ray studies after the injection of ethylene showed the subarachnoid gas to disappear within a very short time. Although the ventricular gas was half gone within three hours, some small residue could be seen even twenty-four hours later. It is well known that any collection of gas in the body tends to come into equilibrium with the tissue gases,[10] so that the gas remaining this long after injection was probably composed more of nitrogen and oxygen than of ethylene.

In two cases, lumbar puncture the day after the injection showed cell counts of 1,200 and 1,400 leukocytes, comparable to similar counts after air,[9] which would indicate that ethylene possesses no more irritating qualities than does air.

The ready solubility of ethylene raised the possibility of its being absorbed more rapidly than fluid could be formed to take its place, with resulting production of a negative cerebrospinal fluid pressure. To investigate this point, a patient was subjected to encephalography, but one needle being used to minimize leakage, and the pressure during the injection and for five hours thereafter was recorded by an aneroid manometer capable of registering both positive and negative pressures, the lumbar puncture needle being undisturbed during this time. The curve of spinal fluid pressure against time so obtained is seen in figure 3. Since during the injection the patient was sitting up, and after it he was lying down, the pressure readings, while the patient is in the sitting position, are corrected by the subtraction of 20 cm. to make them comparable to those while the patient is recumbent. Thus it is observed that the pressure dropped sharply after injection and at the end of an hour reached a negative value of 13 cm. of water. At two hours it had attained zero and subsequently rose to normal values. That such a marked change in pressure may be undesirable from the standpoint of the safety of the patient must certainly be borne in mind. I can only say that in a series of thirty-eight cases it has not been productive of serious sequelae. Nor can this freedom from untoward consequences be accounted for by selection of cases, as the wide variety of diseases in which the gas was used is evident from inspection of table 2.

A disadvantage of the use of any absorbable gas for diagnostic encephalography is the elimination of the examination on the second day, which is of value in certain cases.[11]

Whether encephalography with ethylene will be productive of the same therapeutic results claimed for the procedure with air, notably in post-traumatic headache, remains to be seen.

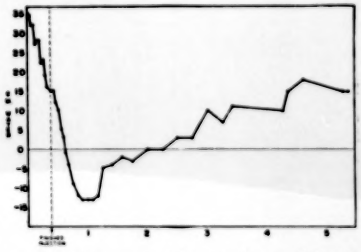

Fig. 3.—Spinal fluid pressure during and after encephalography with ethylene.

SUMMARY

Encephalography with ethylene has been done in thirty cases, without mortality or serious sequelae and with radiologic results equal to those obtained with air. Although the discomfort of the period of injection is not noticeably lessened, the severity and duration of the postinjection headache is markedly reduced. This advantage of ethylene over air warrants its clinical trial in a larger series of cases.

2361 Clay Street.

8. Notkin, J. Y.: Encephalographic Studies in the Idiopathic Variety of Convulsive States, Arch. Neurol. & Psychiat. **24**: 1087 (Nov.) 1930.
9. Grant, F. C.: Ventriculography and Encephalography, Arch. Neurol. & Psychiat. **27**: 1310 (June) 1932.
10. Seevers, M. H.; De Fazio, S. F., and Evans, S. M.: A Comparative Study of Cyclopropane and Ethylene with Reference to Body Saturation and Desaturation, J. Pharmacol. & Exper. Therap. **53**: 90 (Jan.) 1935.
11. Pendergrass, E. P., and Holder, P. J.: Encephalography: The Value of the Second Day Examination, Radiology **26**: 146 (Feb.) 1936.

ABSTRACT OF DISCUSSION

DR. J. JAY KEEGAN, Omaha: Encephalography has become a fairly well established aid in neurologic diagnosis. However, as cited by Dr. Newman, it is a disturbing and sometimes a dangerous procedure, owing to the irritating effect of the air injected. Any improvement in technic that will reduce this reaction will be welcomed by both patient and physician and Dr. Newman's trial of ethylene gas instead of air is to be commended. Experience has taught that, in brain tumor suspects either with increased intracranial pressure or with impaired consciousness, disturbing reactions to an injection most frequently develop and complicate case management or desirable surgery. It is inadvisable to operate on these patients until they have fully recovered from the depression and temperature reaction that usually follow. There probably are two factors in the disturbing reaction of the meninges to air or other gases. One is the mechanical alteration in tension caused by the shifting and perhaps expanding air bubbles within the small meningeal spaces. This may account for some of the immediate reaction after about 20 cc. of air has entered. The second source is the irritating effect of the gas used, as evidenced by the consistently increased cerebrospinal fluid cell count. This irritation may cause immediate painful vascular spasm and later some tissue swelling. The longer the air remains, the longer will the irritation be continued; and ethylene gas, because of its more rapid absorption, appears to reduce the duration of the inflammatory reaction. Another application of such a readily absorbed gas would seem to be in ventriculography. Since encephalography carries additional hazard in cases with increased intracranial pressure and is contraindicated in cerebellar tumors, resort must be made to bilateral occipital trephine and replacement of ventricular fluid by air. The lateral ventricles in such cases usually are dilated to some degree and considerable air must be injected to visualize properly by x-rays both lateral and third ventricles. It is my impression that the reaction is due more to the disturbance of ventricular pressure rather than to the irritating effect of the gas. These patients have initial high ventricular pressure, and shock may occur from simple withdrawal of ventricular fluid. Furthermore, the suboccipital block remains and pressure recurs within six to twelve hours after the air injection, possibly in greater degree because of some tissue swelling. It has been my routine practice to tap these ventricles repeatedly after ventriculography, to permit air escape and control of the recurrent pressure. When this is done it is surprising sometimes how little immediate or subsequent reaction these patients show from ventriculography.

DR. MABEL G. MASTEN, Madison, Wis.: Since Dandy's introduction in 1919 of this most widely used procedure, modifications and improvements have been made, and every phase of the subject has been thoroughly investigated. Eight deaths (five of them brain tumors) in 3,200 encephalograms performed at the New York Neurological Institute speak eloquently for the safety and usefulness of encephalography. While many operators do not use narcosis, desiring the cooperation of the patient and depending on sedative and analgesic drugs, others prefer complete anesthesia. Waggoner and Himler advocate nitrous oxide anesthesia; ether is used at the Mayo Clinic, while Lessinger and Scarff at Bellevue and at the New York Post-Graduate Hospital are enthusiastic over tribrom-ethanol, overcoming postural difficulties of the unconscious patient by a specially designed frame. The most debatable question in encephalography has been the method of withdrawal of spinal fluid and its replacement by gas. Frequent manometric readings guide the operator in not exceeding the limits of normal intracranial pressure. A mortality of four (two in the last six months) in 1,200 encephalograms at Wisconsin compares favorably with Dyke and Davidoff's and emphasizes the safety of a simultaneous and practically a volume for volume replacement system. Whether drainage is complete or partial is a minor point. All who are active in encephalography are aware of the pressing need for improving two features: (1) the discomfort during and succeeding the procedure; (2) the shortening of the period of hospitalization. Those who employ general anesthesia have modified the first, but most experts using air have become reconciled to a three to five day recovery period. Dr. Newman brings new hope that, in the use of ethylene, this purpose may be achieved. Scarff's results, combining the oxygen with tribrom-ethanol anesthesia, compare favorably with Dr. Newman's. While the advantages of rapid absorption of ethylene are obvious, I can see one disadvantage not mentioned by Dr. Newman. This would be the voiding of the important therapeutic application of encephalography. I consider the introduction of a rapidly absorbable gas a distinct contribution to encephalography and a further step in its simplicity.

DR. J. GRAFTON LOVE, Rochester, Minn.: I am in favor of any improvement in the technic of encephalography which will make the patient more comfortable after a procedure that is ordinarily quite painful. There is only one question I should like to ask Dr. Newman. Occasionally it has been necessary to proceed immediately with craniotomy after completing encephalography, because of the patient's condition. This condition has arisen rarely, and it has arisen in patients who have a relatively large tumor which could not be diagnosed otherwise. If we proceed immediately with craniotomy, with ethylene in the ventricular system, I am afraid we shall get into difficulty with the electrosurgical unit because of the explosive substance used.

DR. TEMPLE FAY, Philadelphia: At Temple University we have worried over the problem of preparation of the patient and the relief of headache which the patient suffers after encephalography since 1926. In our series we have had more than 700 cases. From our standpoint and the roentgenologist's standpoint we have found that to give the patient ether spoils the true definition of the cortical pathways, as apparently ether causes a rapid obliteration of the cortical pathways by swelling of the brain. We use tribrom-ethanol with a great deal of satisfaction. We have not tried ethylene. We prepare our patients twenty-four hours before the encephalogram. We administer bromide and chloral the morning of the encephalogram and during the period following the taking of the encephalogram. We have been more and more impressed during the last three years that the matter of headache and reaction is determined chiefly by the volume displaced. As Dr. Newman has stated, a rapid absorption of the ethylene simply means a more rapid replacement of volume of blood or spinal fluid in the system formerly occupied by air. We have found that the headache phenomenon is due to hyperemic stretch of the blood vessels as spinal fluid volume is withdrawn. Within the cranial cavity, the pain fibers are on the vascular tree, and the stretch mechanism can be produced in two ways: First, by withdrawing spinal fluid and allowing hyperemia or stretch of the large vessels and sinuses (diameter stretch). This headache can be immediately relieved during the encephalography, if one will introduce volumes in excess of what has been withdrawn; in other words, push out the excess blood. Second, by overdistention of the ventricular-subarachnoid system, in which the arch of the brain stretches the vascular tree and network as the ventricles become distended and again give this pain reaction. We have given up the direct method of ventriculography in favor of the serial method when pressure is high. That is, we introduce a cannula into the ventricle, plugged with cotton, allowing spinal fluid to leak slowly out for the next six to eight hours. The tampon then is removed, and the patient is allowed to produce a spontaneous ventriculogram from the ordinary movements of the head, air being bubbled into the needle as fluid drains out, into sterile dressings. These patients show a minimum reaction of elevated temperature, headache and discomfort. We believe we have gotten away from the dangers of sudden withdrawal of spinal fluid and sudden inrush of blood to take its place. Dr. Newman's paper interestingly enough suggested that within six hours the 100 cc. of ethylene is replaced by either blood or spinal fluid, or both.

DR. HENRY W. NEWMAN, San Francisco: Dr. Keegan's suggestion that ethylene be used in ventriculography is interesting. Since I am purely a neurologist, not a neurosurgeon, opportunity for that at Stanford has not been very great. The objection which Dr. Love raised to its use in encephalography, when immediate operation might be contemplated, certainly must be borne in mind, because I would dislike to have to report the first case of an intracerebral explosion. It is not only possible

but probable that such proportions of ethylene and air, which would be explosive in nature, might well be present even as long as twelve hours after encephalography. I do not think that the types of gas which might be useful in this procedure have by any means been exhausted. The only feature that is of importance is the solubility of the gas and its lack of toxic properties. I am sure that chemists will be able to supply a gas which is as soluble as ethylene but which doesn't blow up when the radio knife is used near it. The volume for volume replacement method obviously cannot be used with ethylene, since, as I said, there is a considerable amount of the gas absorbed during the injection. Therefore it is quite possible that it is not possible to preserve volume relationships as well, and the fact that there is less headache with ethylene, in spite of that, makes me even more enthusiastic for the gas. That the gas is actually of considerable value in reducing the second type of headache, that which may well occur from the presence of gas in the brain cavities, is well borne out by our patients, who present a marked contrast to the usual very sick patients that I have encountered when air was used. I feel I am conservative in stating that it has a definite advantage in the comfort of the patient following the procedure and none whatever in the comfort of the patient during the procedure, for they are just as sick as they are with air.

CHRONIC GASTRITIS

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MARIE ORTMAYER, M.D.
AND
JOHN F. RENSHAW, M.D.
Visiting Professor of Medicine, Assistant Clinical Professor of Medicine, and Assistant, Department of Medicine, Respectively, University of Chicago
CHICAGO

The diagnosis of chronic, nonspecific gastritis has been obsolete for thirty years. Recent histologic and gastroscopic research have shown that chronic inflammation of the stomach is very common.

Bensley, Faber,[1] Konjetzny [2] and others have made extensive contributions to the knowledge of the histology of the stomach. However, the normal histologic picture is still debatable. Specimens from healthy normal stomachs are rarely obtained because postmortem changes alter the picture, and healthy stomachs are not resected. Some workers, comparing the mucosa of infants to that of adults, believe that every adult has chronic gastritis. This is as false as saying that every adult has chronic appendicitis because microscopically there is a round cell infiltration. We believe that these minor histologic changes in the stomach are not evidence of active disease but are the normal reaction of the stomach to such stimuli as hot or cold food, infectious diseases, and the like. Such changes should not be considered a pathologic entity. It is not chronic gastritis. Severe chronic inflammation is well seen microscopically in postmortem specimens injected immediately with solution of formaldehyde, but the interpretation of surgically resected specimens is doubtful.

Clinical chronic gastritis was rediscovered with gastroscopy by the senior author in 1922.[3] Since then European workers have built up a voluminous literature on the subject. In contrast to histologic study, gastroscopy can be carried out in healthy persons as often as necessary. This has been done systematically in persons of all ages. We found the normal mucosa to be smooth, silk-like, glistening and orange red. Figure 1 shows this gastroscopic picture and a microscopic section through the most normal portion of the mucous membrane that we could find. It shows the surface epithelium, the long body glands, and the scant interstitial tissue, which is almost free of cells.

We have examined more than 2,500 patients gastroscopically, all of whom had abdominal complaints. Twenty-three per cent of this group had normal stomachs gastroscopically, as judged by the appearance of stomachs in healthy persons without evidence of any disease. About 50 per cent of this group presented mucosal changes similar to those of chronic inflammation of other mucous membranes. We saw either layers of whitish, grayish or greenish mucus or hyperemic spots similar to those observed by Beaumont 100 years ago (fig. 2). We observed that these stomachs usually healed. This picture was designated "superficial gastritis." Microscopically the cells show cloudy swelling and slight interstitial infiltration.

Some cases in this group, however, showed in later gastroscopic examinations another picture: thin greenish gray spots appeared that did not change in subsequent examinations. An "atrophic gastritis" had developed. Atrophic gastritis has been observed without a preceding superficial gastritis, for instance, in cases of pernicious anemia. Total atrophy has been observed also. The whole mucous membrane was thin and greenish gray, and protruding blood vessels were seen (fig. 3). Chester Jones and Benedict [4] have shown that regeneration of the mucosa is possible in cases of pernicious anemia, and we have made the same observation. Microscopically the glands are rarefied, and the mucosa is thinned. We are indebted to Dr. James B. Carey of Minneapolis for the photomicrograph of atrophy in pernicious anemia.

The third form is the "hypertrophic gastritis." It is a separate clinical entity. Gastroscopically a swollen, thickened, velvety mucous membrane is seen, often containing hemorrhages and erosions (fig. 4), often showing nodules or large nodes, creases and crevasses. The course of hypertrophic gastritis is typified by failure of the mucosa to revert to normal and sudden recurrence of symptoms even while on careful management. We observed some of these cases over many years (one patient was examined gastroscopically sixty-five times). The small erosions always heal within a week, but others may appear concurrently. No atrophy develops.

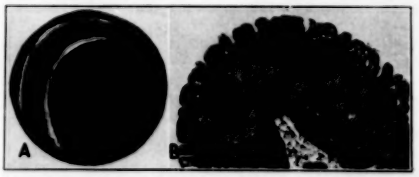

Fig. 1.—Normal stomach: *A*, gastroscopic picture reveals smooth glistening mucosa of antrum and lesser curvature of body. *B*, microscopic section through a fold consisting of mucosa, muscularis mucosae and submucosa with slight but definite interstitial cellular infiltration, which cannot be considered pathologic.

From the Department of Medicine, the University of Chicago.
Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Faber, Knud: Gastritis and Its Consequences, New York, Oxford University Press, 1935.
2. Konjetzny, G. E.: Entzündungen des Magens, in Henke, Friedrich, and Lubarsch, Otto: Handbuch der speziellen Pathologischen Anatomie und Histologie, Berlin, Julius Springer, 1928, vol. 4, part 2.
3. Schindler, Rudolf: Diagnostic Value of Gastroscopy, München. med. Wchnschr. **15**:1609: 535 (April 14) 1922.
4. Jones, C. M.; Benedict, E. B., and Hampton, A. O.: Variations in the Gastric Mucosa in Pernicious Anemia, Am. J. M. Sc. **190**: 596 (Nov.) 1935.

The fourth form of chronic gastritis, that of the postoperative stomach, offers the worst prognosis. All three forms of gastritis occur combined (fig. 5).

The general practitioner wishes to be able to make such an important diagnosis without the aid of complicated methods. Therefore we carefully surveyed 228 cases of gastritis seen at the University of Chicago. We selected fifty-three cases that showed the most marked and undeniable gastroscopic picture not combined with any other disease.

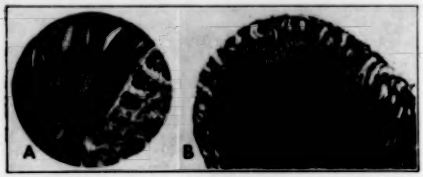

Fig. 2.—Superficial gastritis: *A*, gastroscopic picture reveals thick purulent secretion. *B*, microscopic section shows advanced cellular infiltration only of the upper layers of the mucosa.

The ages of the patients ranged from 20 to 60 years. Our statistics contradict Henning's statement that the gastritis anamnesis is a short one. The average duration of symptoms in our cases was five and one-half years. Hypertrophic gastritis predominated in the male, and the other forms were equally distributed. The subjective symptoms varied. Appetite was often poor but sometimes was normal. The distress was usually epigastric; in the superficial and hypertrophic form it was usually delayed; in the atrophic form it appeared from one to thirty minutes after meals. The site of the lesion (antrum or body) was of no importance. Periodicity seemed to be present in some cases of hypertrophic gastritis, but this was not as marked as in ulcer histories. Alkali gave relief in about half of the cases, but only in the superficial and hypertrophic form. Aggravation by large amounts of food or by special foods was infrequently found. Many complained of gas and belching. In all forms the intestinal function was normal.

Relation Between X-Ray Relief Technic and Gastroscopic Picture

X-Ray Reports	Gastroscopic Appearance
Broad folds.....	1. Hypertrophic gastritis 2. Erosive gastritis 3. Atrophic gastritis 4. Normal picture
Normal folds.....	1. Normal mucosa 2. Hypertrophic gastritis 3. Atrophic gastritis
Small folds.....	1. Normal mucosa 2. Atrophic gastritis

Physical examination was usually negative. At times upper abdominal tenderness was present. One of us (R. S.) has described a tender zone (fig. 6) below and to the left of the navel, which is found only by very light palpation made slowly from the left iliac crest toward the navel. This is by far the most reliable physical sign of chronic gastritis. Gastric analysis, acidity tests, other chemical tests and the cell count of the stomach content are almost useless. All gastroscopists thought that there was an achlorhydria even in the mildest forms of atrophic gastritis. However, we can show that free hydrochloric acid is often present. In one case of complete atrophy of the body plus superficial gastritis of the antrum we found marked hyperacidity. Increase of mucus may be found in a few cases of superficial gastritis. A marked positive urobilinogen reaction in the urine points toward a concomitant duodenitis.

X-ray relief technic, which gives such splendid results in ulcer and cancer diagnosis, is disappointing in chronic gastritis. Since Berg, the outstanding proponent of the method, has admitted this, we may omit our experiences. The accompanying table by Henning [5] shows well the relation between the folds of the x-ray relief technic and the gastroscopic picture. However, in cases in which polyp-like inflammatory nodes are formed, the so-called granulation relief is found. Unfortunately we have seen it in only one of 200 cases of chronic gastritis.

Gastrophotography is of little value. The best panchromatic films are not sensitive enough for this part of the spectrum.

Since there is no absolute clinical symptomatology in chronic gastritis, only gastroscopy can confirm or rule out this important disease.

TREATMENT

The suffering of the patient and the dangers and sequelae of chronic gastritis make careful treatment imperative. In all gastritis the therapy must consist of a bland diet in frequent, small amounts. Raw fruits and vegetables are absolutely contraindicated. For effective treatment the type of gastritis and the immediate form must be considered. In the superficial type in which it is very important to avoid the development of the atrophic form, bed rest of at least eight days and hot applications are necessary. If pus or other secretions are abundant, regular lavages are almost indispensable. In hypertrophic gastritis lifelong strict diet is necessary. If erosions are present they may be irrigated, as Henning suggests, with weak silver solution. In atrophic gastritis milk must be completely avoided. Hydrochloric acid relieves the sensation of pressure and the disagreeable taste. Parenteral liver therapy may be tried in all atrophic forms.

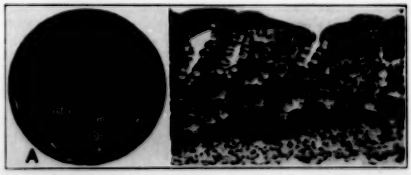

Fig. 3.—Atrophic gastritis: *A*, gastroscopic picture suggests thinning of mucosa, greenish gray and prominent submucosal vessels. *B*, microscopic section shows thinning of mucosa, absence of glands, and metaplasia. Development of goblet cells.

We shall briefly mention some important problems of chronic gastritis:

1. Gross, sometimes fatal, hemorrhages from gastritis have occurred. Perforation has not been seen.

2. Superficial gastritis is not always harmless. One of us (R. S.) observed a case in which it was followed by secondary ascending cholangeitis and death.

5. Henning, N.: Ueber die Entzündung des Magens, Deutsche med. Wchnschr. **60**: 1455 (Sept. 28) 1934.

3. We do not believe, as do Konjetzny, Hurst and Knud Faber, that gastric ulcer originates from chronic gastritis. A discussion of this question will follow in a later publication.

4. Atrophic gastritis may precede gastric carcinoma, as believed by many pathologists.

5. The relationship between chronic gastritis, pernicious anemia and combined cord degeneration is well known but not fully explained.

Fig. 4.—Hypertrophic gastritis: *A*, gastroscopic picture reveals swelling and nodular appearance in the valleys, erosion surrounded by hemorrhagic area on central fold. *B*, microscopic section shows enlarged lymph nodes with extensive interstitial infiltration throughout entire mucosa. Proliferation of the surface epithelium.

6. Gastritis always threatens the results of gastric surgery. Gastroscopy may teach one how this may be avoided.

7. Perhaps atrophic gastritis may cause very marked psychoneurotic symptoms.

8. True vertigo may be related to gastritis.

9. Moutier finds a relationship between chronic gastritis and dermatoses.

10. Research on etiology is an important problem because little is known.

SUMMARY

Chronic gastritis[6] looms as a major problem in internal medicine. It is a very frequent and often a very severe disease. It occurs with many other diseases. The symptomatology is not absolutely characteristic. Physical examination, gastric analysis and roentgenograms are of little aid in making the diagnosis. Gastroscopy with the flexible gastroscope, which is safe and easy and causes little discomfort, is the only method permitting accurate diagnosis. It enables one to treat the patient according to the morphologic indications and possibly to avoid such dangerous consequences as cancer of the stomach.

ABSTRACT OF DISCUSSION

DR. WILLIAM CARPENTER MACCARTY, Rochester, Minn.: The solution of any problem rests on definitions which are universally accepted. In this particular subject of gastritis there must be cytologic, histologic, anatomic and clinical criteria before one dares talk about the subject too freely. The only persons who have any right to talk about gastritis are gastroscopists. Possibly an experimental physiologist might have a right to an opinion, but I suspect that clinicians should be careful when they talk. I like to think of acute gastritis as meaning a condition in which there is an edema, which I am sure that Dr. Schindler could see through the gastroscope. No clinician or roentgenologist can see a congestion which Dr. Schindler can see and which I as a surgical pathologist am able to see; a necrosis, which he and I can see but which the clinician cannot see; a leukocytic infiltration which Dr. Schindler probably cannot see but which I am able to see, and the erosions which he and I can see but which the x-ray man cannot always see. That is what acute gastritis means to me. I think of a chronic gastritis with a lymphocytic infiltration and fibrosis which neither of us can see without a microscope. A hyperplasia or hypertrophy of the mucosa I am sure Dr. Schindler can see. Acute gastritis is not difficult to recognize by Dr. Schindler's method or mine, but chronic gastritis is very difficult sometimes to recognize even by direct visualization. The clinician should be among the last ones to talk about gastritis. I am glad somebody else thinks that cancers of the stomach do not all arise in chronic gastritis. I have never seen an early cancer of the stomach which I thought had its origin in a chronic gastritis, and I have never seen a small cancer of the stomach that didn't arise in association with a chronic ulcer or a polyp. I wouldn't say that cancer never arises in chronic gastritis. That is theoretically possible, and I think maybe Dr. Schindler will see it some day or I shall see it, but as yet I have not seen it. I think it is very dangerous for clinicians to talk too freely about chronic gastritis. If we talk too freely about chronic gastritis, everybody is going to have it, because I think most of us do have it.

DR. LEON BLOCH, *Chicago*: Dr. Knud Faber's sustained interest in the subject and gastroscopy have restored gastritis to a place as a clinical entity. From personal experience I agree with Dr. Schindler and his co-workers that neither x-rays nor gastrophotography, because of the technical difficulty of obtaining good pictures, are of value in the diagnosis of gastritis. In two of my patients, in whom x-ray examination suggested the possibility of fundal carcinoma, Dr. Schindler was able to disprove the latter diagnosis and demonstrate hypertrophy of the rugae due to gastritis. Many patients with gastritis have no symptoms whatever. Lowered gastric acidity is common in acute infectious disease. Dr. Faber ascribes hypo-acidity and gastroscopically confirmed gastritis to an infectious disease which the patient may have had and forgotten about. While Dr. Schindler can see no relationship between gastritis and ulcer, many European and American investigators are not in accord with him. Gastritis has been found in the resected part of the stomach in almost every case of a large series of patients in whom a subtotal resection was done for peptic ulcer at the Michael Reese Hospital. I can hardly believe that race or country can have any bearing on gastritis. No doubt the continued use of gastroscopy will ultimately settle the question of the association of ulcer with gastritis. Many patients who have the typical symptoms of ulcer, regularly recurrent postprandial distress, are found to have hyperacidity and no roentgenologic evidences of ulcer. Where resection or a gastro-enterostomy is performed because of the intractable symptoms and refractoriness to treatment, gastritis without ulcer has been found and relief has been obtained. I should like to ask Dr. Schindler

Fig. 5.—Gastritis of postoperative stomach: *A*, gastroscopic picture reveals jejunum visualized (left upper quadrant), erosions on edematous gastric folds, purulent secretion between folds. *B*, microscopic section shows thickening of submucosa with scattered areas of infiltration. Extensive infiltration of the mucosa with erosions partly covered with exudate.

6. Schindler, Rudolf, and Ortmayer, Marie: Classification of Chronic Gastritis, Arch. Int. Med. 57:959 (May) 1936.

whether it is his experience, as that of Dr. Faber, that gastritis is the cause of the achlorhydria found in many patients past middle age.

Dr. George B. Eusterman, Rochester, Minn.: I want to pay tribute to Dr. Schindler because of his pioneer work in the development of the modern gastroscope and in gastroscopic diagnosis. His presence here will stimulate us to renewed efforts in this important field. While I agree with Dr. MacCarty's observation that no physician should make an unequivocal diagnosis of gastritis without gastroscopic confirmation, certainly this disease entity is of primary interest to the physician; otherwise neither gastroscopists nor pathologists would have the opportunity of seeing many cases of this nature, except perhaps in those rare instances in which the clinician is also a competent gastroscopist. The present problem of most concern to physicians and surgeons, simply stated, is this: To what extent is gastritis or gastro-enteritis, especially in its chronic form, the underlying cause in those conditions frequently diagnosed as pseudo-ulcer, nervous indigestion, gastrotoxic hemorrhage, duodenitis, gastrogenic diarrhea, achylia gastrica, pseudocholecystitis and those relatively infrequent cases presenting antral defects, usually labeled scirrhous carcinoma or syphilis but without evidence of either on histologic examination of the resected tissue? The same problem applies to certain late postoperative sequelae. Certain primary and secondary types of gastritis, acute, subacute, chronic, phlegmonous, specific and perianastomotic, have long been familiar, and more is being learned each day about the nature and extent of gastritis in association with ulcer and cancer, especially from the histologic standpoint, as it is seen here in America. I recently reported a series of ten primary forms of subacute and chronic gastritis in which the inflammatory process was sufficiently extensive to give rise to gross defects, usually antral in situation, and recognizable by the ordinary roentgenologic technic. Such defects were indistinguishable from those produced by carcinoma in particular, by syphilis, by chronic hypertrophy of the pylorus, and by gastric ulcer when associated with antral spasm. From a symptomatic standpoint the cases could be roughly divided into three types according to whether they simulated (1) cases of ulcer or cancer with irregular symptomatology, (2) cases in which the symptoms closely simulated those of ulcer, and (3) cases characterized by pain or simulating biliary colic. The question naturally arises as to how often gastric disturbances are due to patchy or diffuse inflammatory states unrecognized or misinterpreted in the absence of roentgenographic appearances and routine gastroscopic study.

Fig. 6.—Zone of tenderness, sometimes elicited with chronic gastritis.

Dr. Rudolf Schindler, Chicago: I was glad to hear that Dr. MacCarty takes such a view of the clinician's conception of the chronic gastritis. I am afraid the work of clinicians is based on the lack of a clear definition of the normal histologic picture of the stomach of the adult, and I want to emphasize the danger of the clinical diagnosis of gastritis without gastroscopy. It is now such a common diagnosis that one can be quite sure that it is often a wrong diagnosis. That refers especially to the x-ray diagnosis. Because 50 per cent of all people with epigastric distress suffer from chronic gastritis, one would be correct in 50 per cent of all cases to "guess" the diagnosis of chronic gastritis. Therefore, on the law of averages, the roentgenologist should be correct in one half of his cases with epigastric distress, but the x-ray diagnosis is still only a "guess." The question Dr. Bloch asked about anacidity in gastritis can be answered easily. There are many cases of anacidity without gastritis and many cases with gastritis. This differentiation can be made only by the gastroscope.

Clinical Notes, Suggestions and New Instruments

DISLOCATION OF CERVICAL VERTEBRAE: OPERATIVE CORRECTION

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Chicago
and
Frederick Christopher, M.D.
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Evanston, Ill.

G. E. T., a man, aged 43, was admitted to the Evanston Hospital on Sept. 9, 1934, immediately after he had been thrown from a horse, striking directly on the left occipitoparietal region of his head. X-ray examination at this time showed no fracture of the cervical spine, but a slight forward dislocation of the sixth cervical vertebra on the seventh. The dislocation was readily reduced by placing the neck in extension and exerting from 3 to 4 pounds of traction on the head. He was discharged from the hospital September 20, wearing an aluminum neck-brace, which supported the head and held the neck in extension. Reexamination of the neck by x-rays three weeks later showed that the luxation had recurred and had even increased, and the patient was having considerable pain in the neck at this time. He was readmitted to the hospital October 18. Traction was applied to the head and hyperextension of the neck was obtained by placing the patient's body on two mattresses and allowing the head to hang over the edge. November 13 he was again gotten up with the neck-brace and the dislocation immediately recurred (fig. 1 *A*). Operative correction was now decided on and three types of operations were considered: first, the bone graft; second, spinal fusion, and, third, the wiring together of the spinous processes, which had been suggested to Dr. Christopher sometime previously by Dr. Reginald H. Jackson of Madison, Wis. Dr. Ryerson saw the patient in consultation and concurred in this advice. Operation was done by Dr. Christopher November 17. The patient was anesthetized

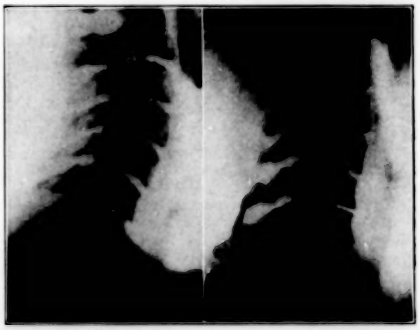

Fig. 1.—Operative correction of dislocation of cervical vertebrae: *A*, dislocation of sixth cervical vertebra on the seventh; *B*, restoration of contour following the wiring together of the spinous processes of the sixth and seventh cervical vertebrae.

with ether and placed in the prone position. The muscles were separated from the spinous processes, and the sixth and seventh spinous processes were identified. By means of Lewin's large towel clip, holes were made in the spinous processes. In the sixth the hole was in the anterior portion, and in the seventh in the posterior portion. Strong iron "stove-pipe" wire was then passed through the holes, crossed over the posterior portion of the spinous process of the sixth cervical vertebra and (fig. 1 *B*) tightened up with the neck extended.

The patient made a very satisfactory convalescence and was discharged from the hospital November 28. He wore the neck-brace until December 9. When examined eighteen days later, he had no pain and was in excellent condition.

Jan. 5, 1935, however, he complained of discomfort in the neck. X-ray examination at this time showed (fig. 2*a*) a fracture of the sixth cervical spinous process, through the drill-hole, with a recurrence of the dislocation.

The patient was readmitted to the Evanston Hospital January 10. On the next day Dr. Ryerson, with Dr. Christopher assisting, performed the following operation: Through a median incision the muscles were carefully separated from the spinous processes and posterior surfaces by the Hibbs subperiosteal dissection, the arches of the vertebrae from the fourth cervical to the second thoracic, inclusive, being completely exposed. The broken off distal fragment of the sixth spinous process and the loop of iron wire were removed.

A new piece of iron "stove-pipe" wire was now passed beneath the arch of the sixth vertebra, between the arch and the spinal cord, emerging in the space between the sixth and the fifth arch. There was plenty of room for this maneuver without any injury to the dura. The upper end of the wire was then bent downward and passed under the base of the spinous process of the seventh vertebra, and the two ends of the wire were twisted together alongside the spinous process

Fig. 2.—*a*, condition five weeks after operation: fracture of the spinous process of the sixth cervical vertebra through the drill hole. *b*, condition after second operation. Wire has been passed beneath the lamina of the sixth cervical vertebra and under the spinous process of the seventh cervical vertebra. Slightly retouched.

(fig. 3). The neck was extended by an assistant, and as the wire was tightened the vertebrae came easily into normal alinement and were held firmly by the strong wire.

In order to produce a bony ankylosis (fusion), thin slips of bone were cut with a rongeur from the sixth and seventh laminae and placed across the laminae, like bridges. It was not deemed safe to use the ordinary gouge and mallet in cutting these slips. The lateral articulations (true joints) between the sixth and seventh vertebrae were curetted, to cause an arthrodesis. Two pieces of cortical bone, cut from the tibia, about 1½ by ⅜ by ¼ inch, were laid on the denuded sixth and seventh laminae, with several small chips. This provided a continuous mass of bone tissue, probably osteogenic, and certainly furnishing the constituents of bone production. The wound was closed in layers, and the thorax, neck and head were placed in a plaster-of-paris half-shell, which had been previously prepared.

Again the patient made a very satisfactory convalescence. Postoperative x-ray examination (fig. 2*b*) showed perfect replacement of the dislocation. February 13 an unsightly, depressed portion of the scar was excised under local anesthesia.

The patient was discharged from the hospital March 15, a little over two months after the fusion operation. He wore the aluminum neck-brace for several months and has since been entirely free from untoward symptoms.

X-ray films made Feb. 28, 1936, more than thirteen months after the fusion operation, show the anterior portion of the body of the sixth vertebra depressed so that it is in contact with the seventh (fig. 4), but the articular surfaces of the lateral joints have become firmly fused in practically normal position. The tibial bone-grafts have also been securely amalgamated with the laminae. There is therefore no danger of any further displacement.

Fig. 3.—Diagram of method used.

The iron wire will not be removed unless it causes trouble, which is extremely unlikely. The patient considers himself entirely cured and has resumed his former occupation and habits. He is not conscious of any limitation of motion in his neck.

COMMENT

This case demonstrates the inadvisability of wiring together the cervical spinous processes through drill-holes, as they are not strong enough, when drilled, to stand the stress. It also shows that a longer period of recumbency, probably three months instead of two, is required to produce an unyielding bony fusion.

The approximation of the spinous processes by ligature is an uncommon operation. Cotton [1] had an almost identical case. The patient was an "iron-puddler," and the sixth and seventh cervical vertebrae were involved. Cotton laced a wire "back-stay" about the spinous processes of these vertebrae with a successful result. The operation was described by Hadra [2] in 1891, and W. A. Lane [3] in 1892, in describing a fracture dislocation of the spine, wrote: "I passed a stout silk ligature between the spinous processes of the ninth, tenth, eleventh and twelfth dorsal vertebrae, and by that means tied the tenth and eleventh spinous processes immovably together." There was at least a temporary recovery in this case.

Fig. 4.—Thirteen months after operation: slight recurrence of displacement, but solid fusion of articulations and laminae; complete functional recovery.

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2. Hadra, B. E.: Wiring of the Vertebrae as a Means of Immobilization in Fractures and Pott's Disease, Tr. Texas M. A. **23**: 187, 1891; Philadelphia M. Times & Register **22**: 423 (May 23) 1891.
3. Lane, W. A.: Fracture Dislocation of Spine; Reduction; Temporary Recovery, Lancet **2**:661, 1892.

The operation was done a number of times by Chipault.[4] Church and Eisendrath[5] refer to a case in which "the two spinous processes were connected by means of a very large silk ligature." In 1898 Brokaw[6] reported a case of fracture-dislocation of the seventh cervical vertebra in which "the segments of vertebrae were wired, and pressure and symptoms relieved." Reference to the operation is also made by Constantinesco,[7] Lloyd,[8] Speed[9] and Mixter and Osgood.[10]

FRACTURED RIBS WITH PARADOXICAL MOTION

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It is important in treating a patient with fractured ribs to place the least emphasis on the broken bones. If attention is focussed on the ribs, certain other more important associated injuries may be overlooked. It is wise to think of all cases of fractured ribs as possible cases of subcutaneous or concealed penetration of the chest. That is, a piece of rib at the fracture site may be as pointed and sharp as a knife and may produce any of the complications of penetrating wounds of the chest. The most important of these are pneumothorax, hemothorax and subcutaneous emphysema. These conditions may produce symptoms and death sometimes erroneously attributed to contusion of the chest with shock and collapse and should be looked for in every case of fractured ribs and corrected when necessary. Aspiration of intrapleural air, and of blood when symptoms of pressure occur, is essential. The pneumothorax apparatus in recording intrapleural pressure and in removing air when necessary is indispensable.

Strapping of the chest with adhesive plaster is an almost universal but questionable procedure. It produces some immobilization of the chest and decreases pulmonary ventilation. Since most fractures of the ribs occur in elderly persons who are prone to pulmonary infection, the importance of this factor may be realized. It may be better to reserve strapping for the type of case described herewith and to depend on medication for relief of pain in the other cases.

Fig. 1.—In inspiration: The plaque consisting of portions of two adjacent ribs together with the corresponding soft tissues of the chest wall are drawn inward, while the rest of the chest wall expands as in normal inspiration. This allows the mediastinum (represented diagrammatically by the trachea but including of course the heart and great vessels) to be drawn toward the opposite side of the chest.

To the list of complications of fractured ribs I add another one, the significance of which I have not seen described. It is illustrated by the case of C. I., a man aged 36, admitted to the Harlem Hospital, June 21, 1936, following an automobile accident. There were many abrasions and lacerations but the important injuries were multiple fractured ribs in the right side of the chest and a compound fracture of the right leg, which was amputated because of gas bacillus infection.

Fig. 2.—In expiration: The plaque bulges outward while the rest of the chest collapses as in normal expiration. The mediastinal structures then move to the injured side. The motion of a portion of the thoracic cage in a direction opposite to the normal is known as paradoxical motion, and its bad effect on the normally stable mediastinum is illustrated in this case. A condition of mediastinal flutter is produced resulting in cardiovascular and respiratory embarrassment. In the diagrams only a small portion of two ribs is shown. It is possible, of course, for the condition to exist involving many ribs and larger portions of ribs.

In the right side of the chest there was found a small area of subcutaneous emphysema and an extensive hemopneumothorax. (Later the blood became infected, requiring drainage.) In addition, in the anterolateral portion of the right side of the chest it was noted that in an area roughly 12 cm. in diameter the chest wall expanded with expiration and collapsed with inspiration in contrast to the rest of the thorax, which expanded with inspiration and collapsed with expiration in the normal manner. Palpation revealed double fractures of two adjacent ribs as indicated in the accompanying illustrations. This plaque of chest wall had lost its firm bony support and moved freely with respiration.

This phenomenon of paradoxical motion is commonly observed after extrapleural removal of ribs in thoracoplasty. In this case, although the ribs were not removed, the effect was similar in releasing a portion of the normal support of the lung. The patient was very dyspneic. This might have been due to the hemopneumothorax. However, when the chest was firmly strapped with adhesive plaster the marked dyspnea disappeared immediately. Strapping was employed for twelve days, after which it was noted that the paradoxical motion had ceased.

SUMMARY

Cases of fractured ribs should be considered in the light of the abnormal physiologic changes or complications that may occur rather than as cases of broken bones. The most important complications are pneumothorax, hemothorax and subcutaneous emphysema. The case reported demonstrates a complication of paradoxical motion with apparent disturbance of the mediastinal vascular structures. This complication involving the mediastinum has not, to my knowledge, been previously described.

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4. Chipault, A.: Ligature et suture des vertèbres, Paris, 1894; Travaux de neurologique chirurgicale, 1895; Revue de chirurgie **16**: 134, 1896.
5. Church, A., and Eisendrath, D. W.: Am. J. M. Sc. **103**: 395, 1892.
6. Brokaw, A. V. L.: Medical Record **54**: 545, 1898.
7. Constantinesco, C.: Bull. et mém. Soc. de chir. de Bucarest **8**: 79, 1905-1906.
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Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

RESPIRATORY STIMULANTS AND THEIR USES

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This is one of a series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Normal respiration is closely coordinated with other functions, such as the liberation of energy, combustion of carbonaceous materials, consumption of oxygen, and particularly the production of carbon dioxide. Any drug that disturbs this relation of respiration to metabolism for more than a brief period seriously upsets the economy of the body. This is the fundamental consideration that must always be kept in mind in choosing and using respiratory stimulants. Only such drugs as are free from this objection are permissible.

Recognition of this limitation properly excludes many substances from use as respiratory stimulants, although they may be used for other purposes. For instance, several of the anesthetics—such as ether and nitrous oxide in the first stage of their effects—induce a large increase in the volume of breathing. This overventilation of the lungs may induce so great a decrease in the carbon dioxide content of the blood that a compensatory decrease of respiration, or even a complete standstill, follows. This tendency to apnea is manifested in the later stages of ether anesthesia, for under full etherization the action of the drug is reversed and respiration is depressed. Failure of respiration under anesthesia is thus quite as much the result of the acapnia produced by the stimulation of respiration in the first stage of anesthesia as it is of the depression that the drug induces in the later stages.[1]

Such respiratory stimulation without a corresponding stimulation of metabolism occurs under a wide variety of substances; e. g., small doses of cyanide and sulfide, monoiodoacetic acid and many others. Each of these drugs has, in addition to its influence on respiration, other effects also that are undesirable.

STIMULATION BY INCREASE OF METABOLISM

Turning then from such undesirable stimulants, one can include in the class of allowable drugs only those that act largely on and through metabolism as well as by direct stimulation of respiration itself. The outstanding member of this group—other than carbon dioxide—is caffeine, which in the form of coffee is a most valuable respiratory stimulant. That the effect of coffee is due chiefly to caffeine is demonstrated by the fact that not only the rate and depth of breathing but the general processes of metabolism as well are increased. There is an increased consumption of oxygen and increased heat production, owing probably to the augmented tonus of the musculature of the body. All these stimulations are most marked in the first ten or fifteen minutes but wear off in the course of a few hours and may in some persons be followed by a distinct feeling of lassitude.

In this class of indirect respiratory stimulants the next most important drug is strychnine. A generation or more ago, when it was customary to prescribe a tonic for all patients who were "run down," strychnine, more commonly than any other medicine, was taken in various mixtures "three times daily, after meals." Strychnine was then regarded as a heart stimulant. Modern pharmacology however has demonstrated conclusively that strychnine has no such direct action on the heart and that its chief effects are the accentuation of the spinal reflexes and the consequent increase of muscle tonus. Yet, properly understood, this action is sufficient to constitute strychnine as having an auxiliary effect on both the heart and respiration. The tonus of the muscles of the body is a major factor in the heat production, oxygen consumption and carbon dioxide production of the body; and the amount of carbon dioxide produced determines the volume of respiration. The tonus of the musculature of the body likewise induces an intratissue pressure that plays a large part in the volume of the venous return to the right side of the heart. And as the volume of the venous return is a principal factor in the volume that the heart pumps into the arteries, muscle tonus largely determines the volume of the circulation. When muscle tonus is low, the heart action is diminished. By its influence on the motor centers in the spinal cord, strychnine increases muscle tonus, the intratissue pressure, the venous return and the efficiency of the heart.[2]

Far more powerful than either caffeine or strychnine as a stimulant to metabolism, and indirectly to respiration, is dinitrophenol. The hazard to health and the high liability to overdosage and death involved in the use of this drug are, however, so great that it should be regarded as essentially a poison.

In European practice lobeline—and the similar drug coramin—has found some advocates in such conditions as carbon monoxide poisoning; but its effect on respiration, although powerful, is brief, and it is a cardiac depressant. Even in Europe the use of lobeline appears now to be giving way to inhalational treatment. In America, where stimulation of respiration by inhalation of carbon dioxide is now fully established, the only condition in which lobeline has been used is asphyxia neonatorum. When injected directly into the umbilical vein, it causes a brief succession of powerful inspiratory gasps.[3] But its use in this condition has been challenged.

ANTIDOTES AGAINST RESPIRATORY DEPRESSION

Aside from the use of caffeine and strychnine in therapeutic doses to induce a prolonged moderate increase of respiration by increase of metabolism, both of these drugs and a number of others are used in much larger dosage as antidotes to counteract imminent respiratory failure due to poisoning by respiratory depressants. The depressants are commonly morphine and the barbiturates. As an antidote to the barbiturates, strychnine is particularly effective: as the barbiturates are also against strychnine.[4] Against morphine the

From the Laboratory of Applied Physiology, Yale University.

1. Henderson, Yandell: Fatal Apnea and the Shock Problem, Bull. Johns Hopkins Hosp. **21**: 235 (Aug.) 1910; Acapnia and Shock: IV. Fatal Apnea After Excessive Respiration, Am. J. Physiol. **25**: 310 (Jan.) 1910.

2. Henderson, Yandell; Oughterson, A. W.; Greenberg, L. A., and Searle, C. P.: Muscle Tonus and the Venous Return, Am. J. Physiol. **114**: 261 (Jan.) 1936.

3. Wilson, R. A.: The Rôle of Intravenous Resuscitation in Asphyxia Neonatorum, New York State J. Med., to be published.

4. Haggard, H. W., and Greenberg, L. A.: Antidotes for Strychnine Poisoning, J. A. M. A. **98**: 1133 (April 2) 1932.

antidotes generally listed are atropine, caffeine, strychnine, camphor, cocaine, apomorphine and lobeline; but none are more than partially effective. Their value is merely accessory to treatment by repeated washing of the stomach—morphine is excreted from the blood into the stomach—plus inhalation of carbon dioxide and oxygen.

Such are the main facts and considerations with regard to the respiratory stimulants that may be administered by mouth or by subcutaneous or intravenous injection. Their importance tends to decrease in proportion as experience increasingly demonstrates the superiority of the inhalational drug that nature offers as the normal respiratory stimulant: carbon dioxide.

THERAPEUTIC USE OF THE RESPIRATORY GASES

Until quite recent years the general conception of the therapeutic values of oxygen and carbon dioxide were largely erroneous, and these errors still linger in textbooks.[5] Because a fire burns more vigorously when supplied with a higher percentage of oxygen instead of air, it was supposed that the life processes of the body must be affected similarly. In fact, on the contrary, as we now know, a normal man breathes no more vigorously and consumes no more oxygen when breathing 100 per cent oxygen than when breathing ordinary air containing only 21 per cent. Oxygen is a food, the most immediately necessary of all foods; but it is not a stimulant. After asphyxia it may even act as a respiratory depressant.

Carbon dioxide was even more completely misunderstood. It was regarded as *par excellence* the asphyxiant gas, and to have administered an inhalation containing carbon dioxide would a few years ago have been condemned as obvious malpractice. It is now known that, on the contrary, the carbon dioxide produced in the body is normally the factor that controls and stimulates respiration. When respiration has been depressed, carbon dioxide by inhalation is a most effective stimulant. It must indeed be diluted to something like physiologic concentration either with air or with oxygen. But in all such mixtures the drug that affords stimulation to respiration and the circulation is carbon dioxide; the oxygen and air are essentially diluents.

The common statement regarding carbon dioxide is that it increases the volume of breathing. In fact, however, this is only one of its effects; another of equal importance is the increased tonus that stimulation of the respiratory center by carbon dioxide induces in the thoracic muscles and diaphragm, and to some degree in all the muscles of the body. It is the tonus of the respiratory muscles that normally keeps the thorax and lungs expanded and prevents atelectasis. It is the tonus of all the muscles of the body, skeletal and visceral, that normally presses the blood on into the veins and maintains the venous return to the right side of the heart, which is a prime factor in maintaining the circulation. It is the lowered tonus of the body as a whole, rather than that of the vasomotor system, which underlies all the depressions of function after surgical operations and in acute illness, and particularly pulmonary complications and failure of the circulation.[6]

The first use to which inhalation of carbon dioxide was put was that of controlling respiration under anesthesia. Before carbon dioxide was introduced for this purpose, the combined effects of overbreathing during the excitement stage of anesthesia, plus the depression of respiration in deep anesthesia, made apnea a frequent occurrence and fatalities occasional. Preliminary morphine, otherwise advantageous, increased the tendency to early apnea, which is now prevented by means of carbon dioxide. If cyanosis occurred, the condition of anoxia disturbed the respiration of the tissues and induced a decrease of carbon dioxide and a consequent postoperative depression of vitality. Acapnia from all these causes induced a feeble respiration, which prolonged the period of emergence from anesthesia, together with nausea and gas pains. Now, on the contrary, with the aid of carbon dioxide, the competent anesthetist is able to a large extent to avoid these evils and to exert an almost complete control over respiration before, during and after anesthesia.[7]

Until recently, most of the postoperative pulmonary sequelae, such as patchy atelectasis and massive collapse, were supposed to be due to irritation of the lungs by the anesthetic vapor or to insufflation of infective material. The fact that these conditions frequently occur also after spinal anesthesia demonstrates the inadequacy of this explanation. The initial cause of postoperative pulmonary complications is rather to be found in the lowered tonus of the thoracic muscles, and particularly of the diaphragm, under anesthesia and during the period of postoperative depression of vitality. Any considerable decrease of tonus permits deflation of the lungs and accumulation of mucus and closure of some of the airways. A rapid absorption of the air from the occluded areas then completes the development of atelectasis. Inhalation of carbon dioxide, aided by frequent change of position, has proved to be an effective means of inducing an increase of tonus, full inflation of the lungs and the prevention, or relief, of postoperative pulmonary trouble, as well as restoration of a full circulation.[8]

Soon after the establishment of carbon dioxide in connection with anesthesia, the same inhalation was applied for the relief of asphyxia. Analysis of the mode of development of carbon monoxide asphyxia showed that, as soon as the victim becomes seriously short of oxygen, overbreathing develops. Acapnia is thus added to anoxia and induces a continuance of subnormal breathing even after the victim is removed from the poisonous atmosphere. Consequently in cases of severe asphyxia the administration of pure oxygen is quite ineffective as a means of resuscitation, for the gas is not adequately inhaled. The addition of carbon dioxide to the oxygen effectively counteracts this condition. Vigorous breathing is induced, the lungs are dilated and flushed with oxygen, the carbon monoxide is rapidly eliminated from the blood, muscle tonus is increased, the venous return is augmented, and the circulation is thus supported and stimulated. Postasphyxial illness is diminished and necrotic developments in the nervous system are prevented.[8]

In the asphyxia of the new-born there can, of course, be no previous overbreathing. It was therefore assumed that there could be no acapnia and no ground for the use of carbon dioxide. In fact, however, experience has shown that carbon dioxide is quite as effective a means of stimulating the respiration of the nonbreath-

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6. Henderson, Yandall: Atelectasis, Massive Collapse and Related Postoperative Conditions, Bull. New York Acad. Med. **11**: 639 (Nov.) 1935; Depression of Muscle Tonus, Lancet **2**: 178 (July 27) 1935; also Muscle Tonus and Anesthesia, Current Researches in Anesthesia and Analgesia, to be published.

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8. Henderson, Yandell, and Haggard, H. W.: Noxious Gases and the Principles of Respiration Influencing Their Actions, American Chemical Society, Monograph Series, New York, 1927.

ing or poorly breathing baby as it is for the victims of carbon monoxide. In the baby, as in the adult, a slight deficiency of oxygen at first renders the respiratory center more sensitive than normally to carbon dioxide, and this increased sensitivity to that stimulus helps the normal baby to start breathing. Under severe deficiency of oxygen, on the contrary, the sensitivity of respiration is greatly decreased, and the deeper the asphyxia at birth the greater the amount of carbon dioxide required to stimulate respiration. The carbon dioxide employed for the initial resuscitation should be of whatever strength is needed to induce respiration, but after respiration is started 7 per cent or even 5 per cent is generally sufficient.[9]

Even more important is the use thereafter of carbon dioxide to promote full expansion of the lungs and the establishment of vigorous breathing in premature or otherwise weak babies. For such babies the inhalation of 5 or 6 per cent carbon dioxide should be repeated several times during the first few days. The present high mortality of the first week or two of life may thus be greatly diminished.

For the woman in whom a prolonged labor and overbreathing have induced a considerable degree of acapnia, fatigue and muscular relaxation, inhalation of 5 per cent carbon dioxide in air or oxygen is helpful. It tends to restore tonus and promote effective expulsive contractions of both the uterus and the abdominal muscles.[10]

In the early stages of pneumonia, inhalation of carbon dioxide has been used as a means of dilating the lungs and inducing coughing, to clear them. (In the hands of Drs. Lewis Gunther and Harry H. Blond[11] this use of inhalation has produced promising results in shortening the disease and lowering its mortality, results which I have been privileged to see.) In fully developed pneumonia, oxygen is now often administered. The inhalation is more effective if some of the carbon dioxide exhaled by the patient is allowed to accumulate in the oxygen tent. One or two per cent is not noticed by the patient; higher percentages render him uncomfortable but probably increase the chances of recovery.[12]

In patients with effort angina, moderate inhalations of carbon dioxide for ten or twelve minutes two or three times a day may afford a partial substitute for physical exercise and some of the benefits of the Nauheim baths.[13]

Inhalation of carbon dioxide—best diluted merely with air—is an effective means of controlling persistent hiccup.[14]

The sufferings of morphine addicts during withdrawal of the drug may be considerably diminished by inhalation of carbon dioxide.

METHODS OF ADMINISTERING CARBON DIOXIDE

For the administration of carbon dioxide diluted either with oxygen or with air, several types of inhalators are employed; each has a purpose and mode of use distinct from the others.

In anesthesia apparatus a cylinder of carbon dioxide is now generally provided and the anesthetist adjusts the mixture of this gas with oxygen, ethylene, nitrous oxide, ether, and so on, as the condition of the patient and the demands of the surgeon require.

In the inhalators used by the rescue crews of city fire and police departments[15] the cylinders are charged with a mixture of 7 or 8, or even 10, per cent of carbon dioxide in oxygen. The gas flows through a bag to a mask, which should be held tight on the face of the patient—usually a victim of carbon monoxide—so that the gas is inhaled without admixture of air. The valves on the mask are so arranged that there is no rebreathing whatever, and the lungs are flushed with entirely fresh gas at each breath.

For cases of asphyxia neonatorum this form of inhalator is also effective. A simpler form[16] is however, quite adequate. It involves merely a cylinder of the gas mixture, a needle control valve, a breathing bag and a tight fitting mask. For the new-born, rebreathing need not be avoided; indeed, it is rather desirable. A mild form of artificial respiration—to replace mouth to mouth inflation—is induced by squeezing the breathing bag intermittently, while the mask is held tight on the face, with the head of the baby in hyperextension, so as to keep the pharynx open. For severe cases of asphyxia and apnea, particularly in babies born of heavily narcotized mothers, the gas should at first be administered through a sound inserted deep into the trachea.[17]

For many purposes—e. g., control of hiccup, prevention of postoperative atelectasis or clearing the lungs in early pneumonia—it is not necessary to use mixtures of carbon dioxide with oxygen. Carbon dioxide alone, mixed with air as it is inhaled, is sufficient and is much less expensive.[16] The flow is regulated by a needle valve and measured on a water manometer, which also serves as a safety blow-off. The gas is administered by means of an open or "slotted" mask. The patient is first allowed to breathe air alone through a hole in the top of the mask or through a slot in its side. Then very gradually the gas is turned on so as to mix with the air inspired through the mask. And as respiration responds, the flow of carbon dioxide is increased until the depth of breathing is nearly or quite maximal. But the respiratory rate should not be increased.

For children threatened with bronchitis, and for premature babies subject to spells of respiratory depression and cyanosis, a small injector tent is convenient.[16] The volume of the gas flowing from a cylinder of carbon dioxide is regulated and measured by a needle valve and manometer and is introduced into the top of the tent through an injector, which automatically mixes it with air in a proportion of from 3 to 6 per cent of carbon dioxide. The stimulation of respiration and the circulation thus induced is much more effective in overcoming cyanosis and increasing vitality than is the inhalation of oxygen without carbon dioxide. With full respiration the blood takes up nearly as much oxygen from air as from pure oxygen. Without an adequate volume of breathing, the baby can die of asphyxia in an atmosphere of oxygen.

9. Henderson, Yandell: Fundamentals of Asphyxia, J. A. M. A. **101**: 261 (July 22) 1933; Resuscitation, ibid. **103**: 750 (Sept. 8), 834 (Sept. 15) 1934.

10. McConnell, W. T., and McCormack, R. L.: Carbon Dioxide and Oxygen in Obstetrics, J. A. M. A. **101**: 1783 (Dec. 2) 1933. McCormack, R. M.: The Physiology of Respiration in Parturition: Results of Clinical Application, Anesth. & Analg. **13**: 211 (Sept.-Oct.) 1934.

11. Gunther, Lewis, and Blond, H. H.: Observations on the Use of Carbon Dioxide in Early Pneumonia, Am. J. M. Sc., to be published.

12. Henderson, Yandell: Reasons for the Use of Carbon Dioxide with Oxygen in the Treatment of Pneumonia, New England J. Med. **206**: 151 (Jan. 28) 1931. Henderson, Yandell; Haggard, H. W.; Coryllos, P. N., and Birnbaum, G. L.: The Treatment of Pneumonia by Inhalation of Carbon Dioxide, Arch. Int. Med. **45**: 72 (Jan.) 1930.

13. Henderson, Yandell: Inhalational Treatment of Angina Pectoris and Intermittent Claudication, Am. Heart J. **4**: 548 (April) 1931.

14. Henderson, Yandell: Resuscitation, J. A. M. A. **83**: 758 (Sept. 6) 1924.

15. Mine Safety Appliances Company, Pittsburgh.

16. Foregger Company, New York; Ohio Chemical & Manufacturing Company, Cleveland.

17. Flagg, P. J.: The Treatment of Postnatal Asphyxia, Am. J. Obst. & Gynec. **21**: 537 (April) 1931.

RESPIRATORY DEPRESSANTS IN LABOR

The most important effect of drugs on respiration occurs in the use—or misuse—of narcotics and hypnotics to ease the pains of labor. In varying degrees all such drugs are respiratory depressants. When administered to the mother they diffuse readily from the maternal to the fetal circulation, and with equal amounts of narcotics in the two bloods the baby is much the more strongly affected. During the early stages of labor this is of no importance. But a dosage that at the time of delivery merely quiets the mother without appreciably depressing her respiration may render the infant so apneic and lethargic that measures of resuscitation are necessary.

The hazard of loss of infant life from the administration of large doses of morphine to the mother late in labor has long been recognized. Morphine decreases the sensitivity of the respiratory center to its normal stimulus, carbon dioxide, in the new-born much more than it does in the adult. I have seen an otherwise normal baby, born of a heavily morphinized mother, that would not breathe at all on any stimulus less than an inhalation of 20 per cent of carbon dioxide, and then too feebly to survive. Less than 2 per cent of all normal babies born of undrugged mothers fail to breathe immediately.[18] But under some of the narcotics and hypnotics now commonly used the percentage of initial nonbreathers rises tenfold or even twenty fold. Under the best hospital conditions the large majority of these infants are successfully resuscitated. Under the less advantageous conditions of outpatient delivery a deeply narcotized baby may never breathe.

In Chicago it was found, in the recent study by the Board of Health,[19] that in more than half the cases in which such drugs as morphine, scopolamine and the barbiturates were used the babies were born in a deeply narcotized condition. In some cases respiration was established with great difficulty. Others died without emerging from their narcotized and asphyxiated state. When only moderate doses were given, the effect on the child was nevertheless that of diminishing his chance of living. The peril to the child was found to be especially grave when large doses of analgesics were given to abolish the pains of labor, followed by administration of solution of posterior pituitary to incite or increase them.

When only moderate doses of morphine are given, and given only in the early stages of labor, the depressant effects of the drug have largely worn off before the baby is required to breathe for itself; and even if the baby is still slightly narcotized, carbon dioxide can generally be relied on to stimulate it to breathe. But the antidotal action of carbon dioxide against the effects of some of the barbiturates is much less effective. For this reason the use of the barbiturates in obstetrics should be confined to those members of this group of drugs the action of which is comparatively brief (two or three hours), and the dosage should be such that the effect of the narcotic is virtually ended (to be replaced by an anesthetic) before the last stages of labor.

The drugs classed as narcotics, analgesics, hypnotics and anesthetics differ widely from one another in three main features. With some, the anesthetic effect is gone in a few seconds, as with nitrous oxide and ethylene. With others it lasts on for many minutes, as with ether and chloroform. With yet others it passes off in two or three or at most four or five hours, as with codeine and morphine. With still others the narcosis may still be deep after ten or twelve or more hours, and this is particularly the case with some of the barbiturates. Obviously, if the baby is not to be born narcotized, drugs of prolonged effect should be administered only early in labor and only those of brief effect employed in the terminal stages. Even when a drugged baby breathes, it breathes weakly; and its liability to a continuance of atelectatic areas in its lungs and the development of pneumonia is much greater than in the normal child.

The second feature in which these drugs differ is their capacity to induce unconsciousness of acute pain. Some are anesthetics, others merely narcotics. Narcotics and hypnotics should be used early in labor: anesthetics only late in labor.

The third feature that in varying degree renders various drugs suitable or unsuitable for use in labor lies in their influence on respiration. Most of the volatile anesthetics, if administered in moderate amounts, tend to induce some degree of overbreathing and become depressants only when administered in excess. Most of the narcotics, on the contrary, are respiratory depressants even in small dosage and in large dosage bring respiration to a stop. With some of the latter, e. g., morphine, the effects are due merely to a decrease in the sensitivity of the respiratory center to its normal stimulus. If the narcosis is only moderately deep, it may be counteracted by concentrations of carbon dioxide above the normal. With others—notably the barbiturates—the abolition of sensitivity to carbon dioxide is so marked that some investigators who have used these drugs on animals, as well as some obstetricians who have administered them to women, have even been led to doubt whether carbon dioxide really plays a major part in the regulation of breathing. In deep barbiturate narcosis the responsiveness of the respiratory center to its normal stimulus is in fact so nearly abolished that breathing continues mainly under the influence of anoxia. Experiments on animals by Marshall and Rosenfeld[20] have shown that the administration of oxygen by removing this influence may even induce a fatal apnea.

A recent study[18] of various hypnotics in labor led its authors to "believe that morphine or any of its derivatives has no place during labor, as they distinctly delay the initial respirations of the child." On the contrary, the use of considerable dosages of the barbiturates, at least in hospitals, was approved. Yet neither experimental nor clinical evidence seems to justify a belief that for a given degree of protection of the mother from suffering the barbiturates are much less depressant of respiration in the child than is morphine. The safe rule would be that sedatives should not be administered in excess of the amount required to relieve anxiety. The behavior of the infant is the best test of safe practice. Normally its respiration develops as an increase of the respiratory movements of the fetus supported by the development also of sufficient tonus to retain each increment of lung expansion as it is gained.[21] If, on the contrary, any considerable percentage of

18. Irving, F. C.; Berman, Saul, and Nelson, H. B.: The Barbiturates and Other Hypnotics in Labor, Surg., Gynec. & Obst. **58**: 1 (Jan.) 1934.

19. Bundesen, H. N.; Dalms, O. A.; Fishbein, W. I., and Hamm, G. E.: Mortality of the New-Born in Chicago During 1935, with Special Reference to the Premature, J. A. M. A. **107**: 270 (July 25) 1936. Hess, J. H.: The Chicago City Wide Plan for the Care of Premature Infants, ibid. **107**: 400 (Aug. 8) 1936.

20. Marshall, E. K., Jr., and Rosenfeld, Morris: Depression of Respiration by Oxygen, J. Pharmacol. & Exper. Therap. **57**: 437 (Aug.) 1936.

21. Henderson, Yandell: How Breathing Begins at Birth, Science, to be published.

normally born infants begin to breathe only after an apnea and asphyxial gasps, as many now do, the drugging of the mothers is excessive.

As nitrous oxide is one of the anesthetics now commonly used in labor, attention should be drawn to Eastman's [22] warning that the amount of oxygen administered with the gas should be kept above 15 per cent, and that if it falls to 10 per cent or less a marked degree of fetal anoxemia may be produced and "occasionally profound asphyxia neonatorum results." Neglect of this general precaution in surgical operations under nitrous oxide has recently been shown by Courville [23] to result in some cases in nervous sequelae and deaths essentially like those following prolonged carbon monoxide asphyxia.

The properties of drugs desirable for use in obstetrics are in many respects different from those desirable for surgical operations. In both fields the prevention of suffering should be as complete as possible without inducing damage. But the surgeon deals with only a single patient, the obstetrician with two. And the fact is now too often overlooked that the science of pharmacology affords no means of rendering childbirth free from even the slightest discomfort or recollection in the mother, except at the price of an occasional infant life.

4 Hillhouse Avenue.

22. Eastman, N. J.: Fetal Blood Studies: V. The Rôle of Anesthesia in the Production of Asphyxia Neonatorum, Am. J. Obst. & Gynec. **31**: 563 (April) 1936.

23. Courville, C. B.: Asphyxia as a Consequence of Nitrous Oxide Asphyxia, Medicine **15**: 129 (May) 1936.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

STOKELY'S FINEST TOMATO JUICE

Manufacturer.—Stokely Bros. & Company, Inc., Indianapolis.

Description.—A canned pasteurized tomato juice, seasoned with salt, retaining in large measure the original vitamin content of the tomatoes used.

Manufacture.—Field control and inspection of deliveries are exercised to insure the receipt of sound tomatoes, at the height of color and flavor, which are washed in troughs of running water, rolled through reel washers equipped with water sprays for thorough rinsing, sorted and trimmed on continuous belts, and the underripe and overripe fruit eliminated. The selected clean tomatoes then pass through a preheating chamber with controlled temperature conditions. The juice is extracted, without being exposed to the air, by a method which produces a juice of thin consistency retaining solid material essential for providing vitamin A. The juice passes immediately to stainless steel salting tanks and from there to the filling machines, where it is filled into enamel lined cans at a temperature between 80 and 85 C. and pasteurized for a definite period. The factory process is under laboratory control and every precaution is taken to avoid contact with air to minimize vitamin destruction.

Analysis (submitted by manufacturer).—Moisture 93.9%, total solids 6.1%, total ash 1.1%, salt (sodium chloride) 0.5%, fat (ether extract) 0.1%, protein (N × 6.25) 0.9%, acidity (as citric acid) 0.4%, crude fiber 0.1%, total invert sugar 2.7% and total carbohydrate (by difference) 3.5%.

Calories.—0.25 per gram; 7.1 per ounce.

Vitamins.—The use of mature tomatoes, the careful factory control, the continuous method of manufacture, and the avoidance of contact with air assure maximum retention of the normal vitamin content.

Claims of Manufacturer.—This tomato juice is a good source of vitamins A and B_1, and an excellent source of vitamin C. It is suitable for infant feeding and for general table use.

POCAHONTAS "FRESHLIKE" STRAINED UNSEASONED PRODUCTS (PEAS, CARROTS, BEETS, SPINACH, GREEN BEANS, TOMATOES, CELERY, APPLES, PRUNES, APRICOTS AND VEGETABLES WITH CEREAL AND BEEF BROTH)

Distributor.—H. P. Taylor Jr., Inc., Richmond, Va.

Packer.—The Larsen Company, Green Bay, Wis.

Description.—Respectively strained peas, spinach, carrots, beets, green beans, celery, tomatoes, prunes, apples, apricots and vegetables with cereal and beef broth; prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL, Aug. 26, 1933, p. 675; Aug. 12, 1933, p. 525; Aug. 19, 1933, p. 605; July 8, 1933, p. 125; July 29, 1933, p. 366; Sept. 2, 1933, p. 779; July 1, 1933, p. 35; July 22, 1933, p. 282; Aug. 10, 1935, p. 437; July 4, 1936, p. 38; July 22, 1933, p. 283).

CELLU JUICE-PAK RED PITTED CHERRIES

Distributor.—The Chicago Dietetic Supply House, Inc., Chicago.

Packer.—Reynolds Preserving Company, Sturgeon Bay, Wis.

Description.—Processed, pitted red cherries packed in undiluted juice without added sugar.

Manufacture.—The manufacturing process is essentially the same as that for Cellu Juice-Pak Royal Anne Cherries (THE JOURNAL, Aug. 25, 1934, p. 564).

Analysis (submitted by manufacturer).—Moisture 84.2%, total solids 15.8%, ash 0.4%, fat (ether extract) 0.8%, protein (N × 6.25) 0.8%, sucrose 0.1%, reducing sugars as invert sugar 10.5%, crude fiber 0.2% and carbohydrates other than crude fiber (by difference) 13.6%.

Calories.—0.65 per gram; 18.5 per ounce.

SEXTON BRAND BLACK RASPBERRIES, WATER PACKED

Manufacturer.—John Sexton & Company, Chicago.

Description.—Canned black raspberries, packed in water.

Manufacture.—Black raspberries picked at the proper stage of maturity are inspected, mechanically washed and filled into cans. The cans are filled with water, exhausted, sealed and processed at 91 C.

Analysis (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 88.6%, total solids 11.4%, ash 0.23%, fat (ether extract) 1.1%, protein (N × 6.25) 1.1%, crude fiber 3.20%, carbohydrates other than crude fiber (by difference) 5.8%.

Calories.—0.37 per gram; 10.5 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

BERKSHIRE HILLS BRAND HAWAIIAN PINEAPPLE CRUSHED, SLICED AND TIDBITS

Distributor.—Butler Flour Company, Pittsfield, Mass., and Butler Coal & Grain Company, Adams, Mass.

Packer.—Hawaiian Pineapple Company, San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 6, 1937

NATIONAL FOOD, DRUG AND COSMETIC LEGISLATION

Two bills [1] are now pending in Congress, each drafted with a view to the removal of the weaknesses inherent in the Food and Drugs Act of 1906. Each bill is designed, however, to go further and (1) to establish standards of purity for cosmetics, (2) to establish standards of truthfulness for the labeling and advertising of cosmetics and prophylactic and therapeutic devices, and (3) to establish methods of law enforcement more effective than those now authorized. Each of these bills is better calculated to protect and promote the public health and to enforce care, skill and honesty in manufacturing and merchandising than were the corresponding bills passed by the Senate and the House of Representatives in the Seventy-Fourth Congress, which failed in conference. There is, however, still much room for needed improvement.

Each bill, for instance, proposes to authorize every manufacturer and dealer in drugs who is within its purview to fix his own private standards of strength for such drugs as are defined in the United States Pharmacopeia and the National Formulary and even for such drugs as are defined in the Homeopathic Pharmacopeia of the United States. The Senate bill goes further and proposes to permit similar tampering with established standards of quality and purity as well as with the standards for potency. If either of these bills is enacted in its present form, no drug defined in any of these books of supposed authority or in any supplement to any such book is to be deemed adulterated because it differs from the standard of strength there set forth, provided only that it conforms to any standard whatever that is plainly stated on the label. How a statement on the label of a container on the shelves of a dispensing pharmacist is to afford protection to the patient for whom a physician, in reliance on his knowledge of pharmacopeial and formulary standards, prescribes any potent drug, such as tincture of opium or tincture of nux vomica, is difficult to understand.

The standards proposed for "patent" and proprietary medicines are about as bad as the free-for-all standards for official remedies. Both bills provide that a drug which is not recognized by the United States Pharmacopeia, the Homeopathic Pharmacopeia of the United States or the National Formulary, or by any supplement to any of them, shall be deemed to be adulterated if its identity or strength differs from, or its quality or purity falls below, that which it purports or is represented to possess. But neither bill requires a manufacturer or dealer in drugs to make any representation as to just what the strength of his "patent" or proprietary medicine is. How little protection such legislation will afford the consumer of such nostrums is obvious. Manufacturers and dealers in "patent" and proprietary medicines are to be further protected, if the bill pending in the House of Representatives is enacted, for this proposes to exempt any maker or dealer of any medicine fabricated from two or more ingredients from the duty of disclosing on the label the name of each active ingredient, provided only that he has disclosed such ingredients fully and correctly to the Secretary of Agriculture. The very purpose of such legislation is to facilitate secrecy, and the fact that an invalid who resorts to self medication and ought to know what he is taking is kept in the dark seems to have been regarded as immaterial. The House of Representatives bill makes it clear that, notwithstanding such exemption from the disclosures of formulas on labels, labels must bear statements of the quantity, kind and proportion of alcohol. The phraseology leaves it extremely doubtful, however, whether barbituric acid, chloral, morphine or any other of the important group of narcotic and hypnotic drugs named in the bill, if it happens to be an active ingredient of any "patent" or proprietary medicine, must be declared on the label or whether the disclosure of its presence to the Secretary of Agriculture will not relieve the manufacturer or dealer from any such obligation.

The Senate and the House of Representatives bills contain provisions intended to regulate the sale in interstate commerce of all devices intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals or intended to affect the structure or any function of the body. Neither bill, however, undertakes to lay down any standards of structural safety, of accuracy or of potency for any such device, nor does either provide any way in which any such standard may be established. The provisions of both bills with respect to the misbranding of devices seem inadequate, for while an effort has been made to make applicable to devices the standards of labeling that apply to drugs, the basic labeling requirement, which applies only to drugs and devices "in package form," will not be applicable to the many important diagnostic, prophylactic and therapeutic devices used by physicians

1. S. 5, introduced by Senator Sheppard of Texas, for Senator Copeland of New York; H. R. 300, introduced by Representative Chapman of Kentucky.

and patients, since such devices are frequently not marketed in packages. Nothing in the bill requires any such device to be marked so as to show its origin, purpose, potency or manner of use.

Both the Senate and the House bills define cosmetics as substances and preparations intended for cleansing, or altering the appearance of, or promoting the attractiveness of, the person; except that soaps are not to be regarded as cosmetics so long as they are represented as being for cleansing purposes only or make no claim to medicinal or curative qualities. Since soaps represented as having medicinal or curative qualities come clearly within the definition of drugs, any soap for which any such claim is made would seem to come within the scope of the bill as both a drug and as a cosmetic. A poisonous or deleterious substance in a cosmetic is not to be considered as an adulterant within the meaning of the law unless its presence renders the cosmetic injurious to users under the conditions of use as prescribed in the labeling or advertisements, or under such conditions as are customary and usual. In the Senate bill an effort has been made further to protect the maker and dealer in coal tar hair dyes by providing that the prohibition on potentially poisonous or deleterious substances shall not apply to such hair dyes if labeled:

> "Caution—This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows."

In appraising the significance of this proposed legislation so far as it relates to cosmetics, the broad statutory definition of the word "cosmetic" must be borne in mind; if soaps are excluded, every preparation intended for cleansing or altering the appearance of the person or promoting its attractiveness is a cosmetic.

The provisions of both the Senate and the House of Representatives bills with respect to the adulteration and misbranding of foods follow more or less conventional lines. Both bills propose that foods fabricated of two or more ingredients for which no definition or standard of identity has been prescribed shall be labeled so as to show the common or usual name of each such ingredient, but the House bill provides that no such disclosure need be made with respect to the ingredients of any proprietary food the ingredients of which have been fully and correctly disclosed to the Secretary of Agriculture, if the disclosure of the ingredients on the label would give to competitors information they could not otherwise obtain.

In the House bill, under the heading "Misbranded Food," are regulations governing the labeling of distilled liquors which seem to imply that requirements as to the labeling of such liquors when used as beverages may be different from the required labeling when used for medicinal purposes. Some distilled and fermented liquors come clearly within the definitions of the term "drug," since they are recognized in the U. S. Pharmacopeia and in the National Formulary and in any case may be intended for use in the cure, mitigation, treatment or prevention of disease. The requirements of the House bill relate particularly to blended whiskies. They provide, too, that any substance that professes to be or is represented as whisky is to be regarded as misbranded if it contains alcohol derived from any source other than grain.

The provisions in both the Senate and the House bills with respect to advertising fall short of what might reasonably be expected for the promotion of public health and common honesty, but the fact that there is now an entire absence of any law that seems even remotely to control the advertising of foods, drugs, diagnostic, prophylactic and therapeutic devices, and cosmetics, sold in interstate commerce makes welcome even such protection as these bills propose. Fortunately, both bills propose to prohibit any advertisement of any drug or any device, among persons other than the medical profession, that represents it to have any therapeutic effect in the treatment of Bright's disease, cancer, tuberculosis, infantile paralysis, venereal diseases, and heart or vascular diseases.

If either of these bills should be enacted, it will be enforced by the Secretary of Agriculture. The controversies that raged while legislation of this kind was under consideration by the Seventy-Fourth Congress as to whether the advertising provisions of the law should be enforced by the Secretary of Agriculture or by the Federal Trade Commission, which was largely responsible for preventing an agreement between the Senate and the House of Representatives at the time, seems to have been resolved in these bills in favor of the Secretary of Agriculture. Both bills, however, expressly provide that nothing in them shall be construed to impair or diminish the powers of the Federal Trade Commission under existing law. This seems to be a happy solution of the difficulty. Many who appreciate highly the efforts that the Federal Trade Commission has made during years past and is still making to protect the public against fraudulent medicines and quack practices, with the limited legal authority at its command, still cannot help feeling that under the terms of the bills offered last year and under the terms of these bills a more effective enforcement will be possible if, outside of the field of unfair trade competition, enforcement is entrusted to the Secretary of Agriculture. Cooperation between the secretary and the Federal Trade Commission may be taken for granted.

Lengthy but in many respects ineffective hearings on food, drug and cosmetic bills have been given by committees of the Senate and of the House of Representatives, each acting independently of the other, during several recent sessions of Congress. It has been suggested that hearings on the pending bills be given by a joint committee of the two houses. However reasonable that suggestion may seem, it is of course one

that must be weighed and resolved by the experience of legislators who have the matter in charge. What the public undoubtedly wants is the prompt enactment of effective legislation, followed by appropriations adequate for the effective enforcement of whatever law may be written on the statute books.

EDUCATION OF THE PUBLIC ON SYPHILIS—A WARNING!

The Advisory Committee to the U. S. Public Health Service [1] has included as an important element of a program for the control of syphilis "the preparation and dissemination of educational material to the general public." Use of radio broadcasts, pamphlets, motion pictures, lectures, exhibits and the press was suggested. For the press the caution was voiced: "Brief statements from authoritative sources should be prepared for the press."

One of the foremost obstacles to the success of a campaign against syphilis is the tabu that has until recently applied to the word "syphilis." The conspiracy of silence that has prevented the dissemination of fundamental information concerning the disease to the nonmedical public has been unfortunate. The situation as to syphilis today is analogous to that of tuberculosis a generation and a half ago. Much of the progress that has been made in the control of tuberculosis is due to the widespread and constant educational publicity given to this disease. Informative publicity concerning syphilis is a valuable method, perhaps the most valuable method, of aiding in the two fundamental points of public health control efforts: (1) finding patients with syphilis and bringing them under competent medical care and (2) holding them under treatment for a long enough period to ensure the maximum result as to individual and public safety.

Informative publicity to the lay public should (*a*) avoid the implication of reform of public morals by legislative fiat and should stress the medical aspects of the control program, (*b*) be scientifically sound and accurate and (*c*) be prolonged over a period of many years.

Publicity as to syphilis is now becoming widespread. Until recently, except for a brief three year period, nothing about the disease, not even its name, could be forced into the public press. Within the last two years, conservative and liberal newspapers and magazines alike—the New York *Times*, *Herald Tribune* and *Daily News*, the Chicago *Tribune*, the Baltimore *Sun*, the Washington *Herald*, *Time*, the *Literary Digest*, the *Readers' Digest*, the *Ladies' Home Journal*, to mention only a few of the 125 periodicals of some 100 communities (up to Oct. 26, 1936—see *Time* for that date)—had mentioned "syphilis" and had printed news stories, editorials or important feature articles concerning it. Now books are being published for the public and at least three leading magazines have scheduled articles for early appearance. In journalistic parlance, the subject is "hot."

Every one knows that a flood of misinformation may do more harm than good. Overemphasis on moral reform, on "social hygiene," and underemphasis on the more easily defensible medical approach are possibilities. Even more dangerous is the publication of such scientific misinformation as suggests (*Literary Digest*, Oct. 31, 1936) that syphilis may be "cured" by one inadequately studied method of treatment in three months, or by another in two weeks.

Another serious danger is the fact that the publicity gives evidence of being concentrated within too short a period. Since current public interest is greater than can be satisfied by medical accomplishment, interest may evaporate faster than it can be appeased. Those who wish to educate will have shortly said all there is to say and will have nothing new to offer, only repetition. Editors and audience alike will treat the subject as the latest fad, wearying of it as quickly as they have wearied of such other great American fads as flagpole sitting or miniature golf. It is possible, and at the present rate likely, that the syphilis control program will be talked to death.

Success in the campaign to control syphilis cannot be attained in a year or two or even in five or ten years. Success, if it comes at all, is to be measured in the same long terms as in the campaign to control tuberculosis—a generation, two generations. What is needed is not a flood of publicity for a few months or years but persistent publicity for many years. Syphilis must be kept as constantly in the public mind as tuberculosis has been kept, and for as long a time.

This is not the first American campaign to control syphilis or the first time that publicity in the press has been given to it. From 1918 to 1920 a similar effort began under almost equally favorable auspices and met with dismal failure. The immediate impetus was the protection from venereal diseases of American soldiers. Large sums of money were appropriated by Congress and the states, and a brave start was made; it collapsed completely within three years. In retrospect, the causes of the failure of this earlier effort seem clear. The first and most usually assigned cause was the withdrawal of federal and state financial support that accompanied the subsidence of war hysteria and the postwar period of retrenchment. This withdrawal of funds, however, was not due to these two factors alone but to lack of public interest and public support. Public interest and support apparently failed for more fundamental reasons: the syphilis control campaign at that time was based largely on "social hygiene" and moral reform, the American people were reacting against the

1. Vonderlehr, R. A.; Bundesen, H. N.; Moore, J. E.; Nelson, N. A.; Pelouze, P. S.; Snow, W. F.; Stokes, J. H.; Wile, U. J., and Usilton, Lida J.: Recommendations for a Venereal Disease Program in State and Local Health Departments: Report of an Advisory Committee to the United States Public Health Service, Ven. Dis. Inform. **17**:1 (Jan.) 1936.

prohibition experiment, and the publicity was both misdirected and too concentrated. These mistakes must not be made again.

The Advisory Committee to the United States Public Health Service has recognized that there would be difficulties facing the educational campaign. "It is recognized," said the committee, "that much may be done to improve this material and to direct it more specifically to the people in need of advice. It would be of great assistance if the Public Health Service were to carry out a thorough study of public health educational programs and methods. Such a study should include the usefulness of the radio, the press, motion pictures, pamphlets and posters, lectures, exhibits, and other methods in the educational program. There is now a wealth of practical experience in the use of these media in general, but little accurate knowledge of the principles, practices and results of popular education pertaining to the venereal diseases." This study should be conducted by recognized experts in the field of publicity. Pending the result of such a study, it would be well if the publicity campaign could be more closely guided by the two most competent and appropriate medical agencies, the American Medical Association and the U. S. Public Health Service. The foundations must be built slowly, accurately and firmly. This will prevent the development of a shaky superstructure that will collapse under our feet.

Current Comment

CALCIUM AND IRON IN BLOOD FORMATION

Many of the life processes of the organism are known to be the resultants of integrated chemical reactions. The student of comparative biochemistry is likely to view these as results of the adaptations whereby evolution has taken place. Thus the orderly oxidation of fat in the body ordinarily requires the concomitant combustion of carbohydrate; the utilization of iron seems to depend, in part, on the presence of copper; the efficiency of the respiratory pigment is conditioned by the presence of inorganic salts and, without free hydrochloric acid, peptic digestion does not proceed normally. With further investigation, more relationships of this sort will be uncovered. A recent study by Orten, Smith and Mendel [1] has emphasized the close relationship between calcium and iron in the formation of erythrocytes and hemoglobin. With the albino rat as the experimental animal, it was shown that the characteristic and abnormal blood picture resulting from a severe restriction of inorganic salts in the food could be changed toward the normal condition by adding only calcium to the diet; likewise growth, which had ceased on the deficient ration, was resumed without the calory intake being increased. The addition of iron at this stage was essentially without effect. If, however, iron alone was added to the salt-poor experimental ration at the outset, it exerted a favorable effect on the blood cells for a time, apparently, according to the authors, until the available store of calcium in the skeleton had been depleted. Clinical experience abounds with instances of a close correlation between these two important elements. Frequently deficient hematopoiesis is attributed to the untoward alteration of the structure of the bone resulting from faulty calcium metabolism; a chemical explanation, as herein suggested, may not infrequently be more tenable.

1. Orten, J. M.; Smith, A. H., and Mendel, L. B.: J. Nutrition **12**: 373 (Oct.) 1936.

NASAL VENTILATION IN CONTROL OF HEADACHE

One of the problems often confronting the practicing physician, according to Parkinson,[1] is that of long standing recurrent headache. In a proportion of the cases one can determine quickly and with considerable accuracy, he believes, whether a headache is or is not of local origin by noting the effect of thorough ventilation of the nose and the sinuses. "Local origin" he defines as arising from a known cause such as undue positive or negative pressure within a sinus or contact pressure of swollen intranasal structures. Obviously, a negative effect from ventilation is not as diagnostically reliable as a positive effect. Shrinkage of the nasal mucosa and displacement of ephedrine solution into the sinus ordinarily are easily and quickly carried out. The "lateral head-low posture" is, Parkinson believes, adequate for this purpose, because it is based on the anatomy of the region. It has the advantages of simplicity and directness and can be carried out entirely without discomfort and with little trauma. The posture mentioned has been shown to make available for displacement simultaneously all the sinuses of one side or of both sides, unless they are barred by hyperplasia or by other unshrinkable tissue. This seems like a useful and safe method of diagnosis and control of headache due to abnormalities of pressure in the accessory sinuses.

1. Parkinson, S. N.: Nasal Ventilation in Diagnosis and Control of Headache, Arch. Otolaryng. **24**: 594 (Nov.) 1936.

DICTAPHONE DUST DERMATITIS

The list of substances alleged to produce dermatitis in sensitized persons continues to increase. One of the most recent additions to the group of offending agents is dust from dictaphone cylinders.[1] Apparently, this is the first description of dermatitis from such a source. The subject was a man, aged 54, who was employed in a large business office in which dictaphones were used. Since the installation of the machines, about eight years ago, he had experienced intermittent attacks of dermatitis affecting the face, the back of the hands and the ankles. He had observed that his skin cleared and remained normal during a period of five months when he had been away from the office—and dictaphones. Recurrences invariably followed contact with the machines. The patient was requested to secure some dictaphone dust as well as scrapings from the composi-

1. Templeton, H. J., and Allington, H. V.: Dust from Dictaphone Cylinders as a Cause of Dermatitis, Arch. Dermat. & Syph. **34**: 828 (Nov.) 1936.

tion mouthpiece and from the cylinders for patch tests. The collecting of these materials itself caused severe dermatitis, the edema of the face and eyelids being so extensive that the patient's left eye was completely closed. Patch tests of both the dust from the machine and the scrapings from the cylinders were strongly positive, whereas no reaction was obtained from the scrapings from the mouthpiece. No reaction to any of these substances occurred in normal control subjects. With the cooperation of the company manufacturing the machines, patch tests were made with three of the substances employed in the manufacture of the cylinders; namely, aluminum stearate, stearic acid and pine tar. All gave negative tests. The patient was advised to avoid all unnecessary contact with the dictaphone, and the machine was placed in a part of the office free from drafts and was cleaned at night. By following these precautions, the patient has remained free from symptoms for more than a year.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Bills Introduced.—S. 98 proposes to prohibit the planting, cultivating, harvesting and processing of "any flowering tops or leaves of hemp or loco weed (cannabis sativa) or Indian hemp" and to make a violation of the prohibition a felony. S. 118 proposes to prohibit the operation or maintenance of a clinical laboratory except under the immediate supervision and direction of a licensed clinical laboratory technologist or of a person holding a valid and unrevoked physician's and surgeon's certificate. The bill proposes to make it unlawful for any person in a clinical laboratory to make any tests or examinations requiring the application of one or more of the fundamental sciences, such as bacteriology, biochemistry, serology and parasitology, unless he possesses an unrevoked certificate, issued by the state board of health, as a qualified technician in the subject or subjects concerned with the tests or examinations, or possesses an unrevoked certificate as a clinical laboratory technologist, or is the holder of a valid unrevoked physician's and surgeon's certificate. The state board of health is authorized to license as a clinical laboratory technologist (1) any person who for more than five years has been engaged actively in the work and direction of a clinical laboratory and (2) any other person who is found to be properly qualified, by written, oral and practical examination. The board is to be authorized also to license as a clinic or laboratory technician (1) any person who for three years has actively engaged in performing tests in a clinical laboratory and (2) any other person found by it to be properly qualified, by written, oral and practical examinations. S. 121, to supplement the insurance code, proposes to authorize insurance whereby the insurer will provide medical and hospital services in case of need, to regulate the conditions under which such insurance may be written, and to require the licensing of persons writing such insurance contracts. S. 133 proposes, in the event a business and professions code is enacted by the fifty-second legislature, to repeal the existing medical practice act and to enact in its stead as chapter 5, division II, of the proposed business and professions code a comprehensive new medical practice act regulating the practice of medicine and surgery, chiropody, midwifery and drugless healing other than chiropractic and osteopathy which are governed by initiative measures adopted in 1922. A. 644, to amend the workmen's compensation act, proposes to permit an injured employee "to select, without restraint, any one licensed to treat in any manner the type of injury which he has sustained." A. 684 proposes to authorize county or city and county boards of education to "grant health and development certificates to physicians and surgeons holding certificates issued by the California State Board of Osteopathic Examiners." This law now authorizes the issue of such certificates only to persons holding certificates to practice medicine and surgery, issued by the California State Board of Medical Examiners.

DELAWARE

Society News.—Dr. Arthur C. Morgan, Philadelphia, addressed a combined meeting of the Kent and Sussex county medical societies in Milford, December 2, on "Diagnosis and Treatment of Acute Cardiac Tragedies."——Dr. Thomas Fitz-Hugh Jr., Philadelphia, addressed the New Castle County Medical Society in Wilmington, January 19, on "Use of Prontosil and Prontylin in Hemolytic Streptococcus Infections."

DISTRICT OF COLUMBIA

Medical Bill in Congress.—*Bill Introduced:* H. R. 3890, introduced by Representative Quinn, Pennsylvania, proposes to prohibit experiments on living dogs in the District of Columbia.

IDAHO

Bill Introduced.—S. 33, to amend the workmen's compensation act, proposes to make compensable "such disease or infection as may arise naturally out of" the employment.

ILLINOIS

Forty or More Years of Service.—The Kankakee County Medical Society observed its forty-fifth anniversary, December 11, by honoring the following members, who have completed more than forty years' practice in the county:

Dr. George W. Van Horne, Grant Park, began practice sixty-one years ago.
Dr. Eugene D. Bergeron, Kankakee, fifty-five years.
Dr. G. M. Phelps, Kankakee, fifty years
Dr. Aaron S. Eshbaugh, Kankakee, fifty years.
Dr. Stanley R. Walker, Chebanse, forty-seven years.
Dr. John A. Brown, Kankakee, forty-three years.
Dr. Fred C. Hamilton, Kankakee, forty-three years.
Dr. Arthur N. House, Kankakee, forty-three years.
Dr. Ulric A. Bedard, Kankakee, forty-two years.
Dr. John V. Lewis, Momence, forty-two years.
Dr. Charles W. Geiger, Kankakee, forty years.
Dr. Samuel A. Worstall, Aroma Park, forty years.

All the physicians except Dr. Van Horne are still in practice. Dr. Walker was the first vice president in 1891 and is now president. Dr. Chester A. Perrodin, Kankakee, is secretary. At the anniversary meeting Dr. Leroy H. Sloan, Chicago, presented a paper entitled "Modern Docsology," a tribute to the guests of honor.

Chicago

The Lewis Linn McArthur Lecture.—Dr. Wingate Todd, Henry Willson Payne professor of anatomy, Western Reserve University School of Medicine, Cleveland, will deliver the thirteenth Lewis Linn McArthur Lecture of the Frank Billings Foundation, February 26. His subject will be "Objective Ratings on the Constitution; Based upon Examinations of Physical Development and Mental Expansion in the Growing Child."

Meeting of Bacteriologists.—A meeting of the Society of Illinois Bacteriologists was held at the Chicago Woman's Club, January 23, with the following speakers:

Dr. Oswald H. Robertson, professor of medicine, department of medicine, Division of Biological Sciences, University of Chicago, The Rôle of the Macrophage in Recovery from Experimental Lobar Pneumonia.
Dr. Sol R. Rosenthal, associate in the department of pathology, bacteriology and public health, University of Illinois College of Medicine, Cellular Response in the Host to Antigenic Substances.
James Russell Esty, Ph.D., research director, Western branch, National Canners' Association, San Francisco, Bacteriological Problems of the Canning Industry.

INDIANA

Committee on Syphilis Control.—The Indiana State Medical Association has appointed a committee on syphilis control. Dr. Floyd R. Nicholas Carter, South Bend, is chairman; other members are Drs. Minor W. Miller, Evansville, and Ernest O. Nay, Terre Haute.

Bills Introduced.—H. 53, to amend the workmen's compensation act, proposes, in effect, to make compensable any "disease arising out of the employment." H. 146, to amend the law requiring a physician appointed by the court in proceedings to commit allegedly feebleminded persons to examine the person and to certify whether or not the person is afflicted with idiocy, imbecility or feeblemindedness, proposes to require such physician to certify further whether, in his opinion, "the welfare of society and of such person would be promoted by his or her sexual sterilization." H. 147, to amend the law authorizing the sexual sterilization of inmates of state institutions who are afflicted with hereditary forms of insanity that

are recurrent proposes to authorize the sterilization also of inmates who are afflicted with epilepsy, or incurable primary or secondary types of feeblemindedness.

IOWA

Bill Introduced.—S. 24, to amend the workmen's compensation act, proposes to make the employer liable to furnish and pay for the surgical, medical, nursing and hospital services necessary to treat an injured employee, without limit as to time or amount.

KENTUCKY

Louisville Quarantined.—Strict quarantine on the west end of Louisville, the most deeply flooded area of the city, and a modified quarantine in an area extending five miles beyond the city limits on every highway entering the city were imposed by the state board of health effective February 1 to keep down epidemics in the wake of the flood. More than 125,000 persons had received inoculations for typhoid up to January 30, and 20,000 a day were continuing to receive them. Materials for 10,000 smallpox vaccinations have also been distributed. The U. S. Public Health Service is installing typing services for pneumonia serum, and an emergency hospital with operating rooms and oxygen tents has been set up in a city high school. Dr. Robert Olesen with a group of sanitary engineers and chemists of the U. S. Public Health Service, six biologists and chemists of the New York City Department of Health and representatives of the Tennessee Valley Authority were among those who went to aid Louisville in its fight against disease. Regulations have been issued for the reoccupation of the evacuated homes, warning especially that "the occupation of damp houses, especially by children and aged persons, is conducive to respiratory ailments, rheumatic disorders and greatly reduced resistance to other illnesses."

MAINE

Personal.—Dr. Herbert R. Kobes, Augusta, has been placed in charge of the maternal and child health program now being carried out by the state department of health with social security funds.

Society News.—Dr. Edwin H. Place, Boston, addressed the Cumberland County Medical Society in Portland, December 11, on "Prophylaxis of Contagious Diseases."——At a meeting of the Hancock County Medical Society in Ellsworth, December 16, the speakers were Drs. Raymond Van Ness Bliss, Blue Hill, on "Chronic Lead Poisoning" and Raymond E. Weymouth, Bar Harbor, "Dextrose as a Therapeutic Agent."——The speakers before the Kennebec County Medical Association in Augusta, December 17, included Drs. Howard F. Hill, Waterville; Arch H. Morrell, Augusta, and Charles B. Popplestone, Rockland, who presented a symposium on syphilis. Dr. Harold G. Tobey, Boston, addressed the Penobscot County Medical Association, December 15, on "Acute Upper Respiratory Infections." Dr. Frederick T. Hill, Waterville, president of the state association, also spoke.——Dr. Jacob Schloss, Boston, discussed "Coma in Diabetes" before the Oxford County Medical Association and members of the staff of the Rumford Community Hospital, December 17.

MASSACHUSETTS

Psychiatric Awards.—The New England Society of Psychiatry at its next spring meeting will make two awards, one of $50 and one of $25, to the writer of the best papers completed or published during the calendar year 1936, embodying research in psychiatry by a younger worker. Physicians, psychologists, social workers or others are eligible and membership in the society is not a requisite. Writers who have once received the award are not again eligible. Seasoned writers, senior physicians, or heads of departments in which there are junior workers, while not inevitably excluded, will not generally be regarded as eligible for the awards. The work on which the papers are based should preferably have been done in New England or by workers now living in New England. Copies of articles or marked copies of journals in which the articles appeared should be sent before March 1 to the secretary of the society, Dr. Harlan L. Paine, North Grafton, Mass.

Bills Introduced.—S. 136 proposes to authorize the establishment and maintenance, within either Essex or Middlesex County, of an institution for the care and treatment of persons who reside within said counties and are suffering from cancer. S. 194 proposes to establish an independent board of registration in "chiropody (podiatry)" and to regulate the practice of that calling. The bill defines chiropody (podiatry) as "the external treatment of the structures of the human foot by medical, mechanical or surgical means without the use of other than local anaesthetics." The board of registration in chiropody (podiatry) is to consist of four chiropodists and one licensed physician. H. 720 proposes that in all proceedings for the discharge of a person from an institution for the insane the person shall have the right to be examined, at his own expense, by physicians of his own choice so as to enable them to testify in such proceedings. H. 724 proposes a new workmen's compensation act. Among other things, the bill proposes that, from the date a worker is injured, he shall be furnished, free of charge to himself, adequate and reasonable medical, hospital and nursing services without limit as to time or amount, and the injured worker is to be permitted to designate the physician, nurse or hospital to care for him. H. 1060 proposes to establish a commission, to consist of one senator, three representatives and one person appointed by the governor, to investigate and study physical therapy, electrophysiology, electrotherapeutics and hydrotherapeutic technic. This commission is to investigate and study anatomy, physiology, analysis of muscle and joint motion and scientific massage and to report to the general court the results of its investigations, with recommendations, before the first Wednesday of December 1937. H. 1150 proposes to repeal the compulsory vaccination law and to provide that no person shall be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any public institution of learning or to the exercise of any right, performance of any duty or enjoyment of any privilege. The bill proposes also that any physician who vaccinates an adult under guardianship or a child, without the written consent of the parent of such child or the guardian of such adult, shall be subject to a fine of $100 or imprisonment for one year or both. H. 1151 proposes to require whoever attends, treats or is called to attend a case of induced abortion to report such case at once to the police authorities and to the appropriate medical examiner. If such a case is treated in a hospital, the superintendent or other person in charge thereof is required to make the indicated report. H. 1255, to supplement the workmen's compensation act, proposes that an injured employee shall select a physician to treat him from a list of physicians established by the department of industrial accidents. H. 1425 proposes that an applicant for a license to operate a motor vehicle furnish a certificate executed on the basis of a medical examination, showing that the applicant is physically and mentally fit and has a favorable intelligence rating.

MINNESOTA

Bill Introduced.—S. 163 proposes a new optometry practice act. It defines "optometry and the practice of the profession of optometry" as "the employment of any objective or subjective means or methods for the examination, diagnosis and determination of any optical defects, deficiencies or deformities of the refractive powers of the human eye, or any visual or muscular anomalies thereof, and the prescribing or adapting of lenses, prisms, ocular exercises or any means for its correction, aid or relief thereof." The bill proposes to make it unlawful for any person not duly licensed as an optometrist to practice optometry as just defined but provides that nothing contained therein "shall be construed as prohibiting any person duly licensed to practice any profession in this state from practicing his profession under the laws of this State relative thereto." Possibly this may be construed to prevent licensed physicians from fitting eyeglasses and spectacles.

MISSISSIPPI

Dr. Dye Is Mayor of Clarksdale.—Dr. Thomas M. Dye is now mayor of Clarksdale, in Coahoma County, according to the *Mississippi Doctor*. He has been secretary of the state medical association since 1917. Clarksdale has a population of 10,043.

New Health Unit.—A new health unit was placed in operation in Jones County January 1, with Dr. Alton R. Perry, Natchez, formerly health officer of Adams County, in charge. Dr. Charles R. Gillespie, formerly of Greenwood, acting director of Leflore County, will succeed Dr. Perry in Adams County.

Society News.—The East Mississippi Medical Society was addressed in Meridian, December 10, by Drs. Eugene B. Vickery, New Orleans, on "Present Day Diagnosis and Treatment of Renal Tumors"; Ray L. Rhymes Jr., Meridian, "Pediatric Surgery"; Charles F. Craig, New Orleans, "Amebiasis," and Seale Harris Jr., Birmingham, Ala., "Treatment of Cardiovascular Syphilis."——Dr. John T. Sanders, New Orleans, discussed "Diagnosis and Treatment of Carcinoma of the Uterus and Cervix" before the Tri-County Medical Society in Brookhaven, December 8.

MISSOURI

Survey of Public Health Administration.—The U. S. Public Health Service is making a survey of public health administration in Missouri, according to the *Health Officer*. When it is completed, a report will be furnished to the governor's commission which is studying the application of the Social Security Act in the state.

Personal.—Dr. Curtis H. Lohr has been appointed superintendent of St. Louis County Hospital, Clayton, succeeding Dr. Edwin L. Sheahan, it is reported.——Dr. Silas Sanford recently completed fifty years of practice in Palmyra.——William R. Goodman, founder and former president of the Blood Donors Benevolent Society of Missouri, was presented with a certificate by the St. Louis Medical Society recently for "meritorious service"; the organization was formed in January 1935 and now consists of 475 members who give blood for transfusion free for persons unable to pay.——Dr. John W. Williams Jr., Springfield, has been appointed director of local health work in the Missouri State Department of Health. Dr. Williams graduated from Washington University School of Medicine in 1923 and has specialized in public health work. He was formerly health officer of Greene County and became associated with the state health department in the summer of 1936.

NEVADA

New Official Organ for the State Medical Society.—The Nevada State Medical Association announces that the *Utah State Medical Journal* will henceforth be its official organ, instead of *California and Western Medicine*. The Utah journal will publish the transactions of the Nevada society, news items and announcements. Dr. Horace J. Brown, Reno, secretary of the association, will act as editor.

NEW JERSEY

Society News.—Dr. Howard W. Haggard, New Haven, Conn., among others, addressed the New Jersey Conference of Social Work at its annual meeting at Asbury Park, December 3-5, on "Health and Social Change."——Dr. Irving S. Wright, New York, addressed the Monmouth County Medical Society, Asbury Park, December 16, on "Peripheral Vascular Diseases of the Extremities."——Dr. Thomas K. Lewis, Camden, addressed the Salem County Medical Society, December 11, in Salem on cardiac irregularities.——Dr. Donald C. Richards, Easton, Pa., addressed the Warren County Medical Society, Washington, December 8, on obstetric anesthesia.

Symposium on Tuberculosis.—Bergen County Hospital, Ridgewood, presented a symposium on tuberculosis, January 19, at which the guest speakers were Drs. Robert E. Plunkett of the New York State Department of Health, Albany, on "The Essential Rôle of the Family Physician in the Campaign Against Tuberculosis"; James Burns Amberson Jr., New York, "Childhood Tuberculosis," and William J. Ryan, Pomona, N. Y., who opened the general discussion. Other speakers were Drs. Oddino Bernardini and Joseph Gordon of the staff on "X-Ray Versus Stethoscope" and "Pulmonary Hemorrhage" respectively. There were also presentations of cases, a pathologic exhibit, a demonstration of tuberculin testing and discussion of unusual roentgenograms.

NEW YORK

Bill Introduced.—A. 260 proposes to authorize the commissioner of motor vehicles to reimburse hospitals not organized and/or operated for profit, for the cost of care rendered indigent persons suffering from motor vehicle injuries. The amount of reimbursement to such a hospital is to be limited to not more than $6 for each day of care rendered to each indigent.

New York City

Dr. Held Honored.—Colleagues and former students of Dr. Isidore W. Held, clinical professor of medicine, New York University Medical College, contributed to the *Review of Gastro-Enterology* for December in honor of his sixtieth birthday. Dr. Held is attending physician at Beth Israel Hospital, where the pathology laboratory is named in his honor.

Meeting on Heart Disease.—The New York Heart Association (the heart committee of the New York Tuberculosis and Health Association) will hold its annual meeting at the New York Academy of Medicine, February 9. The speakers will be Drs. John L. Caughey Jr., on "Clinic Studies of Venous Pressure"; Nathaniel T. Kwit, "The Xanthines in the Treatment of Cardiac Pain," and Janet G. Travell, "Theophylline in Experimental Myocardial Infarction."

District Health Officers Appointed.—Three new district health officers were assigned from a civil service list December 16: Drs. Jacob Rosenbluth, chief diagnostician of the city health department since 1928; Harold H. Mitchell, recently president of the New York State Association of School Physicians, and William F. Wild, Suffolk, Va., health officer of Suffolk and the counties of Nansemond and Isle of Wight. Dr. William C. Buntin, Staten Island, was made health officer of the Borough of Richmond.

Dinner to Dr. Arcé.—The New York Chapter of the Pan American Medical Association sponsored a dinner in honor of Dr. José Arcé, professor of surgery and dean of the University of Buenos Aires and dean of the Argentine chapter of the association, January 11, at the Metropolitan Club. Drs. Adolfo F. Landivar, Antonio Egues and Isidro Castillo Odena, professors of surgery at Buenos Aires, who are with Dr. Arcé on his visit to the United States, were also guests of honor. Dr. Arcé gave an address on "The Future of Pan American Medicine"; other speakers were Drs. Charles Gordon Heyd, President of the American Medical Association, James Ewing of Memorial Hospital, and Dean Lewis, Baltimore. Dr. Edward L. Kellogg, president of the New York chapter, was toastmaster.

NORTH DAKOTA

Bill Introduced.—S. 67 proposes that no sales tax or other levy of any nature shall be payable on sales of equipment, medicine, drugs or supplies to any institution of public charity, including public hospitals under the control of religious or charitable societies.

OHIO

Home Donated for Health Museum.—Mrs. Francis F. Prentiss, Cleveland philanthropist, has given her former residence on Euclid Avenue to house a museum of health and hygiene, which has been contemplated for some time by the Academy of Medicine of Cleveland. The building was occupied by the Huron Road Hospital for several years. The project will be administered by a nonprofit corporation to be known as "The Cleveland Museum of Health and Hygiene, Inc.," of which the incorporators are Dr. Howard Lester Taylor, Dr. Hubert C. King, Dr. James A. Doull, Mr. Howard W. Green and Mr. H. Van Y. Caldwell, executive secretary of the academy of medicine. The gift was made with two provisos, one that sufficient funds be raised to maintain the museum and that, if the association ceases to function, the property will revert to Mrs. Prentiss.

Personal.—Dr. Lorne W. Yule, superintendent of the Institution for the Feebleminded, Apple Creek, has resigned because of ill health.——Dr. William E. Hudson, New Philadelphia, has been appointed superintendent of a new county sanatorium for tuberculosis shortly to be opened in Tuscarawas County, it is reported.——Dr. Carl J. Wiggers, professor of physiology, Western Reserve University School of Medicine, Cleveland, is on sabbatical leave and with Mrs. Wiggers sailed January 23 for a trip around the world.——Dr. Jesse F. Bateman, Cincinnati, assistant superintendent and clinical director of Longview State Hospital, has been appointed superintendent of Columbus State Hospital to succeed the late Dr. William H. Pritchard.——Dr. John J. Sutter, Lima, who served for many years as health officer of Allen County, was appointed health officer of Wayne County recently to succeed Dr. William G. Rhoten, Wooster, who resigned.

OKLAHOMA

Bill Introduced.—S. 108 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to their right to examination by their respective professional boards, to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology to be given by a state board of examiners in the basic sciences. This board is to consist of five members, appointed by the governor for staggered five year terms, each member to be a member of the faculty of the University of Oklahoma, Oklahoma Agricultural and Mechanical College, or some other institution of equal rank in the state and no member to be actually engaged in the practice of the healing art or any branch thereof.

OREGON

Bill Passed.—H. 34 has passed the house, proposing to amend the law so as to require, as a condition precedent to the issue of a marriage license, the presentation of a physician's certificate showing that the prospective bride is free from contagious or infectious venereal disease. The law now requires such a certificate from the groom alone.

Society News.—Dr. Charles H. Manlove, Portland, addressed the Klamath and Lake county medical societies at a special meeting, January 13, on the etiology of polycystic kidneys.——The Alumni Association of the University of Oregon Medical School will hold its next meeting March 8-10 in Portland, celebrating the fiftieth anniversary of the founding of the medical school.——Dr. Louis P. Gambee, Portland, addressed the Central Willamette Medical Society, Eugene, December 3, on intestinal obstruction.

PENNSYLVANIA

Bill Introduced.—H. 255 proposes to create a chiropractic board of examination and licensure in the department of public instruction and to regulate the practice of chiropractic. Chiropractic is defined as "the examination of the human spine by observation, palpation or x-ray and the adjustment of any or all misalignments of vertebrae or adjacent bones or tissues through the use of the hands."

Pneumonia and Venereal Disease Control Commissions Appointed.—Dr. Maxwell Lick, Erie, president of the Medical Society of the State of Pennsylvania, has appointed a commission for the study of pneumonia control in accordance with action of the society's house of delegates at the 1936 meeting. Members are Drs. Edward L. Bortz, Philadelphia, chairman; Edward W. Bixby, Wilkes-Barre; George J. Kastlin and Clifford C. Hartman, Pittsburgh; T. Grier Miller, Henry K. Mohler and Leon H. Collins Jr., Philadelphia; Clifford W. Skinner, Meadville, and Mathew H. Sherman, Harrisburg. Dr. Lick has also appointed a commission on the control of syphilis and venereal diseases with the following members: Drs. Robert L. Gilman, Philadelphia, chairman; Daniel P. Ray, Johnstown; William B. Washabaugh, Erie; Francis M. Ginley, Scranton; Harold L. Mitchell, Pittsburgh, and James M. Henninger, Woodville.

Philadelphia

Death of Mr. Blakiston.—Mr. Kenneth Mackenzie Blakiston, president of the publishing firm of P. Blakiston's Son & Company since 1898, died January 19, aged 77. Mr. Blakiston was connected with the firm for more than sixty years.

Faculty Changes at Temple.—Dr. Thomas Klein has been appointed professor of clinical medicine and Dr. Sherman F. Gilpin clinical professor of neurology at Temple University School of Medicine, it was recently announced. Promotions announced include the following:

Dr. Samuel B. Hadden, to be clinical professor of neurology.
Dr. Edwin Sartain Gault, associate professor of pathology and bacteriology.
Dr. Harry E. Bacon, assistant professor of proctology.
Dr. Daniel J. Donnelly, assistant professor of medicine.

University Alumni Honored.—At Founder's Day exercises at the University of Pennsylvania, January 23, in tribute to the memory of Benjamin Franklin, Drs. George E. de Schweinitz, emeritus professor of ophthalmology, and Robert Tait McKenzie, sculptor and research professor of physical education, were among six alumni who received awards of merit. The citations, inscribed on scrolls, were presented by Luther Martin, New York, president of the General Alumni Society, which sponsored the exercises. Dr. Arthur Bruce Gill was elected director-at-large of the society.

UTAH

Bills Introduced.—H. 48 proposes that all "registered physicians and surgeons recognized by the laws of the state of Utah" shall have equal privileges in treating patients in tax free hospitals. H. 55 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to their right to be examined by their respective professional committees, to pass examinations in anatomy, physiology, pathology, bacteriology and chemistry so far as they relate to the human body or mind. Such examinations are to be given by a committee of basic science examiners, to consist of five members, all of whom must be full-time, paid professors or associate or assistant professors teaching all or part of the basic sciences enumerated and none of whom may be actively engaged in the practice of the healing art. S. 58, to amend the workmen's compensation act, proposes to add to the list of compensable occupational diseases "poisoning by benzol or nitro-hydro, hydroxy-, and amido-derivatives of benzone (dinitro-benzol, anilin, and others) or its sequelae; poisoning by carbon bisulfide or its sequelae, or any sulfide; poisoning by nitrous fumes or its sequelae; poisoning by nickel carbonyl or its sequelae."

Report of Committee on Syphilis.—The Utah State Medical Association recently appointed a committee to cooperate with the state board of health in a campaign against syphilis and other venereal diseases. The committee has made a preliminary report. Among the recommendations are (1) that the state board of health furnish blank forms to physicians for reports of cases, (2) that the state furnish antisyphilitic drugs free to physicians for indigent patients and those with small incomes and (3) that physicians agree to charge patients of moderate incomes $2 for administering intravenous drugs and $1 for administering intramuscular drugs. The committee also recommended that Wassermann tests on pregnant women be made compulsory and that prenuptial Wassermann tests be popularized through education. To help educate the public the committee suggested that the association and the board of health appeal to physicians to disseminate information to their patients, that a group of speakers be prepared to address medical and lay assemblies, and that a full time specially prepared man be detailed from the U. S. Public Health Service to direct this work. Use of the radio, newspapers and educational institutions to help spread information was recommended. Dr. Edward S. Pomeroy is chairman of the committee, and members are Drs. John U. Giesy, Richard P. Middleton, Francis A. Goeltz, Walter G. A. Schulte, Clifford J. Pearsall and Legrand Woolley, all of Salt Lake City.

VERMONT

Personal.—At the recent annual meeting of the Vermont State Medical Society Dr. James N. Jenne, Burlington, resigned from the medicolegal committee after a membership of twenty-five years.

Bill Introduced.—H. 23, to amend the medical practice act, proposes (1) to provide that five, instead of four, members of the board of medical examiners be nonsectarian physicians and that two members be homeopaths; (2) to eliminate the present requirement that one board member be an eclectic physician; (3) to authorize the board, in its discretion, to refuse to license applicants who are graduates of foreign universities or medical schools unless their credentials have first been passed on by the national board of medical examiners or by the Council on Medical Education of the American Medical Association; (4) to require that applicants to be licensed must pass written examinations in the subjects enumerated, with an average grade of 75, with not less than 60 in any one subject, examinations in materia medica being conducted by members of the board representing the same school as the applicant, if the applicant so requests; (5) to add gynecology to the list of subjects in which applicants are examined, and (6) to exclude from the operation of the act "the domestic administration of family remedies."

WASHINGTON

Bill Introduced.—S. 62 proposes to authorize the director of licenses to appoint an examining committee in naturopathy and to regulate the practice of naturopathy. The bill nowhere attempts to define such practice or to state the scope of such a license. It provides, however, that "the intent of this act is to establish naturopathy in the state of Washington as a complete system of therapeutics consistent with the basic philosophy as recognized by the Washington State Naturopathic Association." Apparently an applicant for such a license must pass examinations in the basic sciences to be given by the examining committee in the basic sciences before the proposed naturopathic committee may examine or license him.

WISCONSIN

Bill Introduced.—A. 19 proposes to prohibit any agent of a relief agency, employer, agent of an employer, or agent of an insurance company from influencing, inducing or persuading, or attempting to influence, induce or persuade, an injured or sick person to engage any particular physician or surgeon or to change from a physician or surgeon engaged for attendance on him to another. The bill, however, is not to apply "to life insurance companies in any county where a county physician is employed continuously or in any city where a city physician is employed continuously."

WYOMING

Bills Introduced.—H. 27 proposes to create a board of chiropodist examiners and to regulate the practice of chiropody. The bill proposes to define "a chiropodist, also called a podiatrist . . . as one who for hire, or reward, examines, diagnoses, or treats medically, mechanically, surgically, or by electrical and manipulative means, or by bandaging and strapping the ailments of the human foot." The bill further proposes to define "medical treatment" as the local application or recommendation of any therapeutic agent or remedy for the relief of foot ailments; "mechanical treatment" as the employ-

ment of any forcible means for the correction of any deformity of the foot; "surgical treatment" as the surgical treatments of the ailments of the human foot, except amputation of the foot or toes, or the use of anesthetics other than local; and "electrical treatment" as the employment of electricity to the foot or leg by means of electrodes, machinery, rays, lamps, vibrators, or any other apparatus operated by electricity. H. 55, to amend the pharmacy practice act, proposes to authorize the board of pharmacy to license persons, not licensed pharmacists, to keep for sale and sell, in original sealed packages only, such emergency drugs, medicines and poisons as the board may from time to time designate. H. 81 proposes to require all applicants for licenses to practice any form of the healing art, as a condition precedent to their right to examination by their respective professional boards, to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology to be given by the state board of examiners in the basic sciences. The board is to consist of five members, appointed by the governor for staggered five year terms. Members of the board are to be selected because of their knowledge of the basic sciences aforesaid. Each member must be a member of the faculty of the University of Wyoming or other institution of learning of equal rank and no member of the board can be actively engaged in the practice of the healing art or any branch thereof.

GENERAL

Fraudulent Subscription Agent.—Charles C. Thomas, Springfield, Ill., publisher of the *American Journal of Roentgenology and Radium Therapy*, wishes to inform the medical profession that H. H. Harvey, who is posing as a representative of that firm, is in no way connected with it. He is not authorized to accept or solicit orders for the *Journal* or any book publications.

Changes in Status of Licensure.—The State Board of Medical Education and Licensure of Pennsylvania reports the following action taken at a meeting December 10:

License of Dr. Walter M. Atkinson, Curwensville, revoked because of mental incapacity due to inordinate use of alcoholic liquor.

License of Dr. Isaac S. Diller, North East, Pa., revoked because of conviction of violations of narcotic laws. At the time of the conviction about five years ago, action was postponed on his promise to refrain from practice. Recently he is said to have made an effort to resume practice.

The New York State Board of Medical Examiners reports the following action at a meeting November 20:

License of Dr. Darwin Hecht, whose last known address is 1368 President Street, Brooklyn, revoked because of conviction of a felony.

License of Dr. Abraham Benjamin, whose last known address is 307 East Broadway, New York, revoked because of conviction of a felony. This was an indorsement of a license issued by the state of Michigan.

The Board of Medical Examiners of the State of Oklahoma reported the following action taken at a meeting December 9:

License of Dr. William Walter Hornsby, now of Mansfield, Ark., revoked because of violation of the narcotic laws.

The State Medical Board of the Arkansas Medical Society revoked the licenses of the following at its meeting Nov. 10, 1936:

Dr. James H. Cole, Morrilton, sentenced to serve eighteen months in a federal penitentiary by U. S. District Court.

Dr. Luther Warren Copeland, Trumann, sentenced to serve two years in a federal penitentiary.

Dr. John D. Eddy, Jerusalem, sentenced to serve two years in a federal penitentiary.

Dr. Walter L. Mason, Atkins, sentenced to serve two years in a federal penitentiary.

Dr. Matthias T. Whickam, Blackwell, sentenced to serve eighteen months in a federal penitentiary.

Clearing Ships at Quarantine by Radio.—To facilitate the landing of steamship passengers in the port of New York, the U. S. Public Health Service will grant medical clearance to certain classes of regular passenger vessels by radio, effective February 1, according to the New York *Times*. The new radio system of "pratique" or medical clearance was hailed by steamship concerns as a step forward in increasing the convenience of ocean travel, it was stated, and is the most radical alteration of the country's sanitary defenses against the importation of foreign disease and pestilence since the first quarantine station was established in New York Harbor in 1758. The new system was devised and drafted by Dr. Charles V. Akin Jr., Rosebank, S. I. Ships eligible for the new medical clearance include any passenger vessel in regular service between New York and European ports, between the east and west coasts of the United States via the Panama Canal, between New York and the Panama Canal, and between New York and Bermuda and the West Indies. Vessels ineligible for this clearance are cargo vessels, vessels known or suspected of carrying quarantinable disease, vessels from ports where quarantinable disease is known or is suspected to prevail, vessels with commercial shipments of birds of the parrot family and any vessels of the eligible classification that do not carry qualified ship's surgeons familiar with quarantinable diseases. These surgeons must be certified by the ship owners and by national health authorities where they are registered. Application for radio clearance must be made not more than twenty-four hours or less than twelve hours before its expected arrival at New York to the ship's agents or owners, who in turn get notification from the health station at quarantine. In the event that communicable disease develops on the ship after it has received clearance, the master of the ship must notify the health commissioner and hold victims of the disease in isolation pending disposition as directed by city health officers. Ships that have received clearance by radio will pass right through quarantine and go immediately to their docks. In some cases the abolition of the quarantine delay will save as much as half a day in docking ships.

Medical Bills in Congress.—*Changes in Status:* S. Res. 69, creating a Senate Select Committee on Government Organization, has passed the Senate. All bills and resolutions introduced in the Senate proposing legislation concerning reorganization, coordination, consolidation or abolition of units in the executive branch of the government will be referred to this committee. The committee is authorized to report to the Senate at any time by bill or otherwise its recommendations on any matters covered by the resolution. Any bill or resolution so reported is to be accorded a privileged status. H. J. Res. 81 has passed the Senate, with amendment, proposing to create a Joint Committee on Government Organization, with powers to investigate the organization and activities of the various units of the government to determine whether any such units should be coordinated, consolidated or eliminated. S. 115 has passed the Senate, proposing to add the name of Gustaf E. Lambert to those honored by the act recognizing the service rendered by Major Walter Reed in the discovery of the cause and means of transmission of yellow fever. *Bills Introduced:* H. R. 2714, introduced by Representative Tolan, California, proposes to provide employment for the blind citizens of the United States and its possessions. H. R. 3589, introduced by Representative Colmer, Mississippi, proposes to extend to contract veterinarians the benefits accorded veterans of the Spanish-American War, including the Philippine Insurrection and the China Relief Expedition. H. R. 3676, introduced by Representative Dowell, Iowa, proposes to erect a three hundred bed addition to the veterans' hospital at Des Moines, Iowa, for the treatment of general medical and surgical disabilities. H. R. 3680, introduced by Representative Pfeifer, New York, proposes to amend the Social Security Act by authorizing an appropriation of $25,000,000 to assist states, counties, health districts, and other political subdivisions of the states in the control of venereal diseases. H. R. 3796, introduced by Representative Kvale, Minnesota, proposes to extend the privileges of compensation and hospitalization accorded to members of the American military forces to American citizens who volunteered in the French military forces and while serving in the Foreign Legion or while serving in flying status in the Lafayette Escadrille or Lafayette Flying Corps, received injuries of a permanent nature of more than a 10 per cent degree in line of duty between the dates of April 6, 1917, and Nov. 11, 1918.

Government Services

Pennsylvania Accredited for Tuberculosis Eradication

Federal recognition of Pennsylvania as a modified accredited area, the state having reduced bovine tuberculosis to less than 0.5 per cent, was celebrated with special ceremonies at Harrisburg, December 16. Forty-three states have now been accredited.

Government Builds Second Narcotic Farm

The cornerstone of the United States Narcotic Farm will be laid at Fort Worth, Texas, February 13. Speakers at the ceremonies will include Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, and Miss Josephine Roche, Assistant Secretary of the Treasury, Washington, D. C. This is the second narcotic farm to be built by the U. S. Public Health Service under the jurisdiction of the division of mental hygiene. The first was opened in May 1935 at Lexington, Ky. During the first year the Lexington institution admitted 1,240 persons as patients. Of this number 283 were voluntary patients. According to the annual report of the public health service "there is no question that the treatment of narcotic addiction in a hospital has distinct advantages over the management of such cases in a correctional institution."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 2, 1937.

Anatomic Variations of Alimentary Tract

At the annual Congress of Radiology, held in London, an important discussion took place on anatomic variations of the alimentary tract. Sir Thomas P. Dunhill dealt with the esophagus and thoracic stomach. He reported a case of short esophagus with parietal thoracic stomach sent to him with the diagnosis of carcinoma of the esophagus and roentgenograms that were supposed to show this. He made a barium sulfate examination which showed clearly a short esophagus and thoracic stomach. He subsequently saw twenty-five similar cases. In such cases an increase took place in the amount of the stomach which gradually found its way into the thorax, and then retention of contents in the esophagus produced ulceration above the narrowed stricture, with increasing dilatation. In certain cases an esophagus of normal length herniated back into the thorax. Not many cases had been seen in England until recently, though they had been reported in the United States.

THE STOMACH AND DUODENUM

Dr. R. B. Myles said that anatomic variations had not yet been put in their proper compartments in the English textbooks. The J-shaped stomach might be described as normal in the average person, the transverse stomach was normally seen in the person of stocky or obese build, and the long or hyposthenic stomach was perfectly normal in a long, thin patient. Alterations in the duodenum were largely dependent on the habitus of the patient. In the most normal type of orthotonic patient the duodenal cap was placed a little above the center of the duodenal loop, and the gastrojejunal junction at about the same level as the upper angle of the duodenal cap. A duodenal diverticulum showed as a smoothly rounded sac with clear-cut borders, close to the viscus, to which it was attached by a neck. In most cases duodenal diverticula were single, but occasionally there were two or three.

THE APPENDIX AND COLON

Dr. S. C. Shanks said that the appendix, being vestigial, was subject to many anatomic variations in length, lumen, position and mobility. The classic appearance with a barium sulfate meal was that of a blind tube 3 or 4 inches long, from 2 to 4 mm. in caliber, and showing a gentle single or double curve. There might be marked variations. Its length might be represented by a mere thread of barium, or the caliber might be 5 or 6 mm. Muscular tone and peristalsis might cause inconstant constrictions, which should be distinguished from permanent strictures. The colon might show anomalies of length, rotation, fixation or size. Congenital malformations of the rectum and anus were not susceptible to radiographic demonstration, as the alimentary canal ended blindly. But theoretically two could be demonstrated—the rectum in the male opening into the urethra by a narrow channel through the prostate, and the rectum in the female opening into the navicular fossa behind the vaginal orifice. But he could not find any record of such demonstration.

THE DIAGNOSIS AND TREATMENT OF CANCER OF THE LUNG

Dr. A. C. Christie said that cancer of the lung was increasing and at necropsy was found in from 5 to 10 per cent of cases of cancer. In every case it arose in a bronchus, from the indifferent epithelium in the basal layer of the mucosa. A high rate of metastasis was typical, apparently resulting from the circulation in the lung, which was intimately connected with all parts of the body. The first and most frequent symptom was persistent coughing, the next pain in the chest, the third dyspnea and the fourth hemoptysis. The most important means of diagnosis was radiologic. Until recently the prognosis was considered hopeless, but now a few cured cases had aroused hopeful expectancy. A few daring surgeons in several countries had removed the cancer. The results of radiotherapy were encouraging, but it had no place as a preoperative measure. It could usefully be directed against the tumor through the open wound. Dr. Christie referred to a woman whom he saw in 1928 with a cancer in the right main bronchus. The chest was opened and radiation directed against the tumor. She was still alive and well. He suggested that the intrathoracic application of x-rays to the stump of the tumor might be made ideally by low voltage, soft x-rays, without damage to deeper structures.

The Control of the Sale of Poisons

The regulations governing the sale of poisons have been greatly tightened in recent years. The passing of the pharmacy act of 1933 and the coming into force of the poisons rules of 1935 have made a great difference. Before these became effective any one could obtain deadly poisons, and at inquests coroners deplored the ease with which fatal drugs could be bought from pharmacists. The position indeed became so dangerous that the government suggested to the Pharmaceutical Society that means should be taken to prevent the indiscriminate supply of dangerous drugs, and new administrative machinery became necessary in order that the new regulations might be brought into force. Every pharmacist's shop had to be registered. The Pharmaceutical Society appointed inspectors, and membership in the society, formerly optional, became compulsory, resulting in an increase of membership from 16,000 to nearly 23,000. Such dangerous drugs as alkaloids can now be obtained only from registered pharmacists, the purchaser must be known to the seller, and the sale must be entered in a poisons register. Barbital and other barbiturates, which have figured in so many inquests, may no longer be supplied to the public except on a medical prescription. Poisonous substances of commercial use for the destruction of vermin and other purposes, such as arsenical compounds, barium salts, strong sulfuric acid and sodium hydroxide, can still be obtained from dealers, but these have to be registered by the local authorities. No figures have yet been published showing the benefit derived from the new regulations, but they render it much more difficult to obtain posions for self drugging or for criminal purposes and should therefore diminish the numbers of cases of accidental, suicidal and criminal poisoning.

Sir John Bland-Sutton

Sir John Bland-Sutton, surgeon, anatomist, comparative anatomist, pathologist, comparative pathologist, naturalist and traveler, has died in his eighty-second year. This list shows why the *Times* remarks that the profession has lost "a type of surgeon so rare as to be produced only once or twice in a century," and it might have added "only in Britain." Other countries have of course produced their great men in all these sciences but it is their cultivation by a foremost surgeon that is peculiar. The Swiss physiologist Haller of the eighteenth century might be supposed to be an example. He was equally eminent as an anatomist and botanist but, though he lectured on surgery, he never performed an operation. The first and greatest example of the type of Bland-Sutton was "the father of scientific surgery," John Hunter, who took life itself for his study. It does not seem likely that any more men of this type will be produced, for we live in an age of increasing specialism, in which workers "know more and more about less and less."

The son of a field naturalist, he followed his father's bent and wrote in his Introduction to Pathology "born and edu-

cated in the country, my early boyhood was spent in the pleasant pursuit of studying animal life in fields, lanes, ditches, ponds and hedges." He began to train for a schoolmaster, but his interest in natural history decided him to become a surgeon. In 1878, at the unusually late age of 23, he joined the Middlesex Hospital School of Medicine, but he lost no time and qualified in 1882 and gained the F.R.C.S. six years later. At the school he won a scholarship and gold medals and came under the notice of the anatomist and distinguished surgeon Mr. Henry Morris, who made him a prosector. In 1881 he was appointed demonstrator of anatomy, and his interest in comparative anatomy and pathology led to his joining the prosectorium of the Zoological Gardens. He contributed valuable papers on these subjects to the *Proceedings of the Zoological Society* and the medical journals. He described the Zoological Gardens as "a rich hunting ground for pathological spoil" and in 1886 was able to write "Since 1878 I have systematically examined the bodies of 12,000 animals from fish up to man." This work gave great breadth to his knowledge of disease. With a philosophic mind stored with facts drawn from many sources, a keen scientific imagination and a simple and lucid style, he became a fascinating teacher with tongue and pen. Take this reflection on his work at the Zoological Gardens: "My attention has always been aroused by two very opposite conditions —the paucity and, in some cases, the absence of lesions to account for death; in the other case, by extensive disease of vital organs which must have been present for a considerable time without destroying life." Referring to the theory that in the human species the erect posture is responsible for prolapse of the uterus, he pointed out that this occurred with tolerable frequency not only in domesticated mammals but in the lioness, the deer, the antelope and other animals. Similarly he found flexion of the uterus in greater degree in monkeys than in women. He concluded that there must be other causes for these conditions than the erect posture.

In 1886 he was appointed assistant surgeon to the Middlesex Hospital and in 1891 surgeon to the Chelsea Hospital for Women. He devoted himself mainly to the surgical treatment of the diseases of women, a subject in which he was one of the pioneers. Before his time gynecology was in the hands of physicians who specialized in the subject before the antiseptic system made abdominal surgery possible. He was good at diagnosis and a rapid and skilful operator. He wrote and lectured extensively. A fluent speaker, he kept his audience on the alert by quips, unexpected examples drawn from the animal kingdom and homely but telling modes of expression sometimes drawn from the Bible. In dealing with clinical subjects he had the advantage of a foundation in pathology such as no one could claim. Among subjects with which he was particularly identified were the treatment of uterine myomas, pregnancy complicated by tumors, the after-effects of operations on the female pelvic organs, and gallstones. He was the greatest authority of his day on tumors, on which his book remained the standard one for thirty years. His interest in animal life led him to travel all over the world. He always brought back new facts which he turned to good account in his writings. In Spain the bull ring attracted him and he explained how the various steps were designed to weaken the muscles of the bull's neck and finally to bring him into such a position that the matador could use the espada with deadly effect. At the Royal College of Surgeons he was Erasmus Wilson lecturer (1885-1887), Hunterian professor of comparative anatomy and surgery (1887-1889), Bradshaw lecturer (1918), Hunterian orator (1923) and president (1923-1925). He was the first president of the Association of Surgeons of Great Britain and Ireland (which was founded in 1918, mainly by the efforts of Lord Moynihan), president of the Medical Society of London (1914) and president of the Royal Society of Medicine (1920). He was appointed by the war office to collect the large number of specimens of gunshot injuries of the great war. The collection, with valuable clinical histories, is now housed at the Royal College of Surgeons.

In addition to numerous papers, the following are his most important books and contributions to books: "Comparative Dental Pathology," "An Introduction to Pathology" (based on three Erasmus Wilson lectures delivered at the Royal College of Surgeons), "Comparative Dental Pathology," "Ligaments, Their Nature and Morphology," "Dermoids," "Surgical Diseases of the Ovaries and Tubes," "Tumors Innocent and Malignant," "Tumors and Diseases of the Jaw," "Osteology" in Morris's "Anatomy," "Essays on Hysterectomy," "Diseases of Women" (with A. E. Giles), "Gallstones and Diseases of the Bile Ducts," "Tumors" in Keen's Surgery and also in Warren and Gould's International Textbook of Surgery, "Fibroids," "Misplaced and Missing Organs," "Man and Beast in Eastern Ethiopia" and "Man and Creatures in Uganda."

PARIS

(From Our Regular Correspondent)

Jan. 2, 1937.

Obligatory Retirement of Medical Teachers

The Pomaret bill, which will propose the surrender of the diploma and licenses to practice not only of physicians and dentists but also of members of all liberal professions, such as architects and engineers, at the age of 65, is scheduled to be debated in the national legislature. The fight against passage of such a law has been so well organized by the medical and dental professions in France that the chief sponsor of the bill, Mr. Pomaret, has been quoted as seeing the injustice of forcing professional men to retire at the age of 65 without any compensation in the form of a government pension. The object of the sponsors of the proposed law was to relieve the congestion in the liberal professions, thus permitting recent graduates to make more rapid progress than if the higher positions were occupied by their predecessors. The opposition to the bill has assumed formidable proportions, and at present it is doubtful whether the bill will be pushed. A severe blow in a similar direction has, however, been delivered as the result of the passage of a recent law according to which professors in the medical schools will be obliged to retire at the age of 65 instead of 70 as is at present the case in France. Professors in the Institute of France, who are appointed because of their research or other contributions to the progress of the arts, will be obliged to retire at the age of 55. This law has as one of its immediate results the obligatory retirement of four of the leading teachers in the Paris Medical School, including the cardiologist Laubry, who was recently elected to this chair. Another recent law would not permit any one who has retired on a government pension after reaching the age limit to add to his income by occupying any public office or the pursuit of any business or profession. This law would apply equally to those engaged in teaching in a public institution during a portion of their time and would prevent them from accepting compensation for work done outside such a position. These socialistic proposals have aroused such a storm of indignation, including the minister of public instruction, that their enforcement has been temporarily suspended.

Medical Control of Sickness Claims in Social Insurance

Collusion between unscrupulous physicians and the insured necessitates constant supervision, through its medical inspectors, by the disbursing bureaus of the social insurance organization. A case was referred to, in a recent letter, in which such collusion had taken place. The physician was fined and given a short jail sentence. At a recent meeting of the Associated Disbursing Bureaus, Dr. Forestier of Paris outlined how medi-

cal control is at present organized not only for the purpose of observation during the six months' period of indemnity for a single ailment but also from the time a case is reported to the caisses or primary disbursing bureaus. Without such a medical control it is impossible to ascertain whether the insured has been really unable to work, whether expensive pharmaceutical preparations not allowed by the caisses (disbursing bureaus) have been employed, whether laboratory examinations have been made and treatments administered which appear superfluous in the given case and, finally, whether the stay in a hospital has been unnecessarily prolonged. Frauds are frequent in social insurance and can be avoided only by strict medical control. The abuses cited apply equally to dental care, because experience has shown that the bills for such services often exceeds those asked for operations. If the control does not function in all medical and dental cases from the onset of the illness, it is impossible to follow the serious ones and suggest a treatment which may not only greatly aid the patient but also save a great deal of outlay on the part of the respective social insurance bureau. In the case of those who are more or less permanently incapacitated and who are entitled not only to an invalidity pension but also to medical care during the first five years, the latter also needs constant supervision. Only institutions that have made a contract with the social insurance authorities shall be allowed to care for this class of cases, in order to cut down the expense as much as possible without neglecting the needs of the insured.

Instead of a central caisse or collecting and disbursement bureau for each of the eighty-six departments (counties) in France, the country is divided into a smaller number of regional bureaus. Each of the latter now has its technical commission to arbitrate any dispute between the report of the medical inspector and the insured. If the latter is not satisfied with the amount allowed for the outlay for a given illness and the time granted for absence from work, the insured can appeal to the regional technical commission, which will make an examination of the claimant and decide whether the indemnity is an adequate compensation in the given case. The technical commission is composed of the medical inspector of the regional bureau, a chairman who is a physician, and a medical expert appointed by the local judge of the civil court.

Poliomyelitis in Paris During the Last Three Years

At the December 1 meeting of the Académie de médecine a report covering the observations of the health department of Paris and its suburbs on the incidence of poliomyelitis was made by Tanon and Besson. The main features of the spread of the disease are the part played by carriers and the occurrence of atypical and abortive cases. In 1933 there were fifty-six cases with seventeen deaths, in 1934 forty-three cases with twenty-two deaths, and in 1935 seventy-two cases with nineteen deaths. Although the incidence as a rule is higher toward the end of summer and beginning of autumn, there was a sudden increase in December 1934 and January 1935. As to the age of the patients, thirty-four were less than 3 years old, sixty-four between 3 and 8 years of age and nineteen from 21 to 32. In the case of school children they always belonged to different classes and there did not appear to be any contact between them. No two cases were found in the same flat or family. This shows that, at least in Paris, contagion does not play an important part. The patients are usually hospitalized as soon as possible.

Vaccination with Cultures of the Vaccinal Virus

At the December 1 meeting of the Académie de médecine Drs. Harry Plotz and René Martin reported their results in the clinical application of cultures of vaccine virus as a substitute for that obtained from cows. The vaccine virus was cultivated by means of the Li and Rivers method with the slight modification of using 75 cc. Erlenmayer flasks in place of the "coliar flasks" (as employed by Rivers) and 3 cc. of Tyrode's solution without serum. By this means a cerebral, dermal and testicular strain was cultivated, one strain reaching 152 passages. The virus remains active for rabbits but has a tendency to decrease in virulence in subsequent transplants. The culture virus was dried by the Flosdorf-Mudd apparatus and this vaccine has been used to vaccinate children in the same manner as was employed by Rivers, Ward and Rivers, and Herzberg. The first series vaccinated comprised fifty-seven children. They were vaccinated on one arm with the culture vaccine and on the other with the usual vaccine. Nineteen of the children were immune to both inoculations and showed no reaction on either arm. Of the thirty-eight positive with the usual vaccine, only nineteen were positive with the culture virus. As 0.1 cc. was injected intradermally, the authors thought that the amount of vaccine injected was insufficient. In a second series of forty-four children, 0.2 cc. was used. Of this series, twenty-one children showed "typical" reactions on both arms. Four were positive with the usual vaccine and negative with the culture virus, while four others were positive with the culture virus and negative with the usual vaccine. The other children were immune to both vaccines. The positive results obtained with the culture virus are characterized by a typical but slightly local and general reaction as well as a slight scar.

BERLIN

(From Our Regular Correspondent)

Dec. 21, 1936.

The Economic Condition of University Docents

The economic condition of the younger generation of German University instructors has never been particularly favorable unless the young assistant or docent received money from home or had some other private income. In the hope of some day succeeding to a professorial chair, these men must meanwhile carry on their academic activities while forced to live on a restricted budget. This bad economic situation cannot fail to exert its influence on both mind and character, and many a university professor may carry throughout his life the scars of these early privations. For some time a better regulation of the living conditions of the private docents has been under discussion. Remedial measures have become all the more necessary as the opportunities for making a living in the academic field have been each year more circumscribed so that in the end only the few attain the goal; namely, appointment to a professorship. Scholarly enterprise must perforce suffer from this unfortunate situation and many academicians are forced to enter side lines of professional activity. It frequently happens that the most able of these young men transfer their services to the world of industry. Speedy remedial measures are necessary if Germany is to maintain secure her world-renowned tradition of scholarship. This problem is dealt with exhaustively in the "Amtsblatt des Reichs- und Preussischen Ministeriums für Wissenschaft, Erziehung und Volksbildung." It is not encouraging for an assistant 25 or 26 years of age to earn a monthly stipend of from 80 to 200 marks, and he himself later as a docent must have at least a teaching commission if he is to earn a better income. After years of research the docent receives the title of assistant professor, but even this signifies no economic betterment. Only an appointment to the rank of full professor in ordinary or extraordinary entails relief from economic pressure. But such an appointment, it should be repeated, is reserved for the few.

As a result of the situation, the rising generation of academicians have resorted to cooperative aid. The national minister of public instruction has created a "Reichs-Dozentenwerk" or National Docents' Self Help Organization, the duty of which is to render financial assistance to needy university graduates.

Standards applied to individual young persons before aid is granted are political and moral reliability, scholarly capability and economic want. Assistance may take the form of a loan scheduled to mature within from one to five years or a monthly stipend may be granted. In this way the youthful graduates are assured a minimum income on which to subsist as well as the possibility of marriage. The funds are supplied from the treasury of the German Docents' Society and by the National Federation of German Universities. The latter organization has only just been disbanded. The self-help activities are to be subsidized in future by voluntary contributions. The exact rates of contribution have been established by the National Ministry of Public Instruction and they are so scaled that any one kindly disposed toward the cause may contribute his bit. This means a sacrifice on the part of some persons but in the interest of the greater number. Along with the financial aid there shall be an equitable distribution under supervision of the Reichsdozentenwerk of the available assistantships and other posts.

A comparison of the foregoing with the data on the "condition of the brain workers," which recently appeared in *Soziale Praxis*, is of particular interest. The total number of such workers is reckoned at around 608,000; this group is distributed professionally, 265,000 in technical-scientific fields, 142,000 in the arts, 99,000 in education and 102,000 in other fields of intellectual endeavor. There are in Germany today about 36,000 architects, 211,000 engineers, 13,000 chemists, 51,000 physicians, 12,000 dental physicians, 48,000 teachers of special subjects, 19,000 attorneys and 17,000 publicists. In the year 1933 there were registered at the employment offices 93,000 unemployed brain workers; by 1936 this number had been reduced to 28,500.

The retrogression in the number of the unemployed has been especially marked in the technical professions; there were in June of this year only about 7,000 unemployed technicians. In addition to this favorable outlook for the engineers there has been an increased demand for physicians. Little improvement is apparent in the condition of the legal profession; statistics show that even now 41 per cent of its members earn less than 3,000 marks yearly. Women teachers too are in a bad way. Men teachers fare slightly better despite the overcrowding in the teaching field. In 1933 there were about 29,000 unemployed artists; during the current year this number had sunk to somewhat below 19,000. Whereas 43,600 persons completed the secondary schools in 1933, only 25,850 had done so in 1936. In the summer semester of 1932 there were 18,300 new matriculants in the universities; for the winter semester 1935-1936 the corresponding figure was 9,100 matriculants, and for the summer semester of 1936 only 5,500.

BUCHAREST

(From Our Regular Correspondent)

Dec. 4, 1936.

Four Thousand Cases of Pellagra in One County

In the county of Gorj, 4,000 cases of pellagra have occurred in the last two months. A committee sent to this district to investigate established that the probable cause of the epidemic is the consumption of unripe maize. In this district bread is made from maize flour mixed with wheat flour, the ratio being 3:1. But maize flour is used also in cooked form. The popular dish of the peasants, called mamaliga, is made from maize flour and milk and a little cheese. While the disease generally makes its appearance during the spring months, in this case it occurred in the late summer and early fall. Another striking feature is the acute character of the onset. The rashes on the hands and feet are very painful. The county health officer hastened to the help of the unfortunate patients by distributing large quantities of wholesome wheat flour and preparations containing vitamins. Severely affected persons were taken to hospitals, while the less severely affected were treated in their homes. Since this intervention no new cases have occurred.

Marriage of Leprous Patients in the Rumanian Leper Camp

In the district of the Danube delta there are a number of lepers for whom the state erected a camp on the border of the village of Tichilesti, where they are kept under strict medical supervision. There are men and women of all social classes. Recently two couples appealed to the camp physician for permission to marry. In one instance a man of 26 wanted to marry a woman of 26. In the other instance a man of 36 asked the hand of a 16 year old girl. As the law does not forbid the intermarriage of leprous patients, the doctor had to give his consent, explaining that the couples would have to remain in the camp all their life. An improvised altar was put up on the meadow adjacent to the village, and a clergyman and a registrar appeared in white coats and leather gloves; the parties did not write their signatures into the registry book, as is customary. After the short ceremony the newly married couples returned to the camp and the clergyman, the registrar and the physicians burned their white cloaks, gloves and shoes and fumigated all the witnesses.

National Congress on Contagious Diseases

The first Rumanian Congress on Contagious Diseases was held in Craiova. M. Costinescu, minister of health, presided and all the counties of Rumania sent official delegates. Dr. Costinescu, minister of health, said that the child mortality rate in Rumania is the highest in Europe. The cause is contagious diseases. Far reaching public health innovations are necessary to check the ravages of contagious diseases. Public health organizations have to be extended to the most remote villages. Dr. Viorel Popescu emphasized the necessity of holding graduate courses to make the prophylaxis of contagious diseases more efficacious. He showed that in the rural districts the mortality rate due to contagious diseases is three times that in towns. The cause of this is neglect of the villages. At present, one physician has under his care usually thirty villages, or 20,000 to 30,000 persons. The position of the village physicians is aggravated by the small salary given them. Dr. Anastaziu urged the erection of more hospitals for contagious diseases in the rural districts, rendering possible the segregation of infectious patients. In his opinion it is the duty of the health ministry to insure that at most 10,000 persons shall have one physician, every 3,000 inhabitants shall have one relief station and every 2,000 souls shall have one nurse. The doctor and his staff shall dwell at the seat of the relief station and at the same place shall be an infirmary for epidemic cases and also an ambulance.

The Bust of Professor Babes

A bust of the late Professor Babes, founder of the first Pasteur institute in Bucharest, was unveiled in Bucharest October 27. The bust is placed in a beautiful square, opposite the Bucharest Bacteriologic Institute. Memorial addresses were made by Professors Bacalogliu, Ciuca, Manicatide, Marinescu and Proca. At the same time the remains of Professor Babes were interred in the crypt situated in the garden of the bacteriologic institute. He died ten years ago and was buried in the Bucharest Greek Catholic cemetery.

Meeting of the Balkan Medical Union

The Congress of the Balkan Medical Union was held this year in Istanbul, Turkey, October 7-13, and it was attended by about 200 members, chiefly from Turkey, Rumania, Yugoslavia and Greece. The main topic of discussion was the position of

the science of balneology in the Balkan states. Among the Rumanian physicians was Professor Gheorghiu, rector of Bucharest university. The Rumanian members read nine papers, in which they endeavored to emphasize Rumania's natural balneologic resources. Among the Jugoslavian physicians was Professor Benzis and among the Greek physicians Professor Marcovici, professor of materia medica at the University of Athens. They voted to hold the next congress at Athens in 1938.

Choice of Occupation by Female Medical Students in Case of War

The Bucharest war ministry sent circular blanks to all female medical students and women physicians in the country asking what occupation they would choose in case of war. The overwhelming majority of students answered that they would prefer to act as hospital nurses, while the women physicians answered that they should like to work in military hospitals as well as on the field and in the hinterland.

Students' Strike at Cluj University

Students of the university of Cluj Faculty of Medicine went on strike three days ago. Today a deputation of the students handed a memorandum to the dean of the faculty demanding the exclusion from the faculty of all minority students. They stated that the medical students will not appear at the lectures as long as the faculty does not withdraw the punishment of Vucu, secretary of the association of medical students, and of Dumitrescu, president of this association. The university magistrates had found these two students guilty of causing disorder in connection with the examinations for admittance to the faculty. The aim of the disturbance was to keep Jews from passing the examination. For this offense the board of the faculty sentenced both leaders to exclusion from two terms. Thereupon the rest of the medical students went on strike, and it is not at all impossible that the strike will extend also to the other faculties of Cluj University.

ITALY

(From Our Regular Correspondent)

Nov. 30, 1936.

Sanitary Regulations for Airplanes

Colonel Dr. Porru of the Istituto Medico-Legale Aeronautico of Florence, in a recent lecture considered the health measures that should be adopted in air ports and aboard airplanes for the prevention of infections, such as examining the travelers on their arrival and departure. This measure is already provided for in Italy: Physicians are on duty at the airports at all times for the purpose of making the examinations. Persons found suffering from infections are isolated in the airport hospital and later are sent by special ambulance to municipal hospitals. The speaker advised the establishment in aviation of a clean bill similar to that used in navigation. The prevention of plague, cholera, smallpox, exanthematic typhus and yellow fever is given wide attention, especially because of the fact that traffic and aviation between Europe and the countries where the diseases are frequent has increased. Prevention of yellow fever is of the utmost importance because of the frequency of the disease in Africa, the abundance of transmissive insects in that country and the increase in traffic and aviation between Europe and Africa. Yellow fever is also frequent in natives of Anglo-Egyptian Sudan, a zone of heavy traffic also. The speaker referred to work by Dr. Trolli, head physician in the Belgian Congo, who found that insects which transmit yellow fever may enter airplanes during their stay in airports and be carried in the airplane to great distances at the speed of 2,000 kilometers a day. The speaker advised such preventive measures as examination of the plane and, in certain cases, its disinfection and also medical examination of the passengers for six consecutive days, especially if quarantine is not established at the given zone. To prevent infections, the Air International Committee of Sanitation was established in 1933. Air posts of all nations belonging to the committee should have airports in which quarantine can be applied and disinfection performed. There are now ten sanitary air posts and many other "authorized" air posts in Italy. "Authorized" air posts have not all resources that sanitary air posts have, but all work on hygiene and prevention of infections is carried on by physicians who take turns, so that their services are available at any time.

Personals

Prof. Rocco Iemma, vice president of the Società Internazionale di Pediatria, director of the Clinica Pediatrica of Naples University and a well known Italian pediatrician, resigned his positions because of having reached the legal age limit (70 years). Six of his pupils are regular professors, forty are free professors and twenty are directors of hospitals or foundling homes. The scientific contribution of Professor Iemma's school exceeds 900 important articles, including those on specific treatment of leishmaniasis in children, vaccine therapy in typhoid and paratyphoid, tuberculosis in children and preventive vaccination of tuberculous diseases. When Professor Iemma served thirty years as professor, homage was paid him by the collaboration of fifty-two official scientific centers. Original articles were published also in his honor by 120 scientists both in Italian and in foreign countries.

General Dr. Franchi, the head of military sanitation, has also reached the age limit, and General Lieutenant Dr. Loreto Mazzetti, professor of hygiene at the University of Rome, has been appointed to the position. Dr. Mazzetti was the head of the laboratory of chemical and clinical bacteriology of the Naples Hospital. During the war he organized the isolation hospital in Udine. He was the director of the Ospedale Militare e di Sanita della Tripolitania and later of the School of Sanitation of Florence.

Marriages

THOMAS STRICKER EDDLEMAN to Miss Frances Mae Strickland, both of Charleston, S. C., in Tarboro, N. C., Nov. 12, 1936.

STANLEY EARL COPELAND, Worcester, Mass., to Miss Harriet Estelle Wentworth of Oxford, in New York, Nov. 28, 1936.

DONALD ELLISON MACGREGOR, Indianapolis, to Miss Allison Priest Arnold of Louisville, Ky., Dec. 24, 1936.

GUS WARLICK NEECE, Fort Moultrie, S. C., to Miss Mary Elizabeth Davis of Mayo, Fla., Dec. 12, 1936.

OSCAR THOMPSON WOOD JR., Philadelphia, to Miss Frances Joan Travers in Millville, N. J., Dec. 5, 1936.

HENRY GEORGE ATHA, Providence, R. I., to Miss Grace MacTavish, in Groton, Conn., Nov. 16, 1936.

WILBUR OGDEN ARNOLD to Miss Olive Edith Schell, both of West Palm Beach, Fla., Dec. 5, 1936.

JAMES HARRY BUNN JR., Baltimore, to Miss Frances Middleton of Aberdeen, Md., Nov. 26, 1936.

ELDRIDGE T. NORMAN, Linden, Ala., to Mrs. Janie T. Harrison of Montgomery, Ala., Dec. 1, 1936.

CLIFFORD F. BRODERICK, Stevens Point, Wis., to Miss Ruth Potton of Milwaukee, recently.

JULIANNA RANDOLPH TATUM, Radnor, Pa., to Mr. Harvey Chace Perry, Dec. 12, 1936.

JOHN O. BARFIELD to Miss Edith Herlong, both of Miami, Fla., Dec. 1, 1936.

JOHN L. BAUBE, New York, to Miss M. F. Robinson of Clio, Ala., Dec. 26, 1936.

GEORGE K. ARNOLD, Dallas, Texas, to Miss Mae Sue Day, Dec. 1, 1936.

Deaths

William Guilford Stearns ● Chicago; Northwestern University Medical School, Chicago, 1893; professor of pathological anatomy and general pathology at the Northwestern University Dental School, 1894-1898, and assistant professor of mental diseases and medical jurisprudence at his alma mater, 1898-1900; lecturer of neurology at the College of Physicians and Surgeons, 1900-1902; fellow of the American College of Physicians; member of the American Psychiatric Association and the Central Neuropsychiatric Association; chairman of the section on insanity of the National Conference of Charities and Correction in 1898; served with the Medical Advisory Board No. 3E, Selective Service, as a consultant in neuropsychiatry, 1917-1919; assistant physician to the Illinois Eastern Hospital for the Insane, Kankakee, Ill., 1894-1895, pathologist, 1895-1897, and medical superintendent, 1897-1899; medical superintendent of the Oakwood and Lakeside Sanatoria, Lake Geneva, 1900-1904; medical director of the North Shore Health Resort, Winnetka, Ill., 1931-1936; aged 71; died, January 11, at his home in Evanston, Ill.

Ernest Ellsworth Laubaugh ● Boise, Idaho; Medico-Chirurgical College of Philadelphia, 1909; fellow of the American College of Physicians; formerly secretary of the Idaho State Medical Association; assistant demonstrator of physical diagnosis at his alma mater, 1911-1912, and assistant in the department of neurology, 1912-1913; bacteriologist to the state board of health, 1913-1917, and medical advisor to the department of public welfare, 1919-1920; served during the World War; director of laboratories, St. Luke's Hospital; chief of laboratory service, St. Alphonsus Hospital; formerly director of the clinical laboratory, Veterans Administration Facility; aged 49; died, Dec. 13, 1936, of pneumonia.

Oscar Edwin Locken ● Crookston, Minn.; University of Minnesota Medical School, Minneapolis, 1920; speaker of the House of Delegates of the Minnesota State Medical Association; first vice president and member of the executive committee of the Minnesota Public Health Association; formerly mayor of Crookston; at one time health officer of Crookston; past president of the Minnesota Sanitary Conference, Red River Valley Medical Society and the Minnesota League of Municipalities; president of the Sunnyrest Sanatorium Commission; member of the state planning board; on the staff of the Bethesda and St. Vincent's hospitals; aged 45; died, January 18, of pneumonia.

Herman Schwatt ● Spivak, Colo.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; past president of the Denver Sanatorium Association; medical director and superintendent of the Sanatorium of the Jewish Consumptives' Relief Society; formerly medical director of the Workmen's Circle Sanatorium, Liberty, on the staffs of the Montefiore Hospital, New York, Montefiore Hospital Country Sanatorium, Bedford Hills, and St. Joseph's Hospital for Consumptives, New York; aged 58; died, January 7, in the Beth Israel Hospital, Denver, of influenza.

Lewis Albert Sexton ● Hartford, Conn.; Vanderbilt University School of Medicine, Nashville, Tenn., 1906; past president of the American Hospital Association, the Connecticut Hospital Association and the New England Hospital Association; assistant superintendent of the Johns Hopkins Hospital, Baltimore, 1914-1917; superintendent of the Hartford Hospital from 1917 to 1936, when he became director emeritus; aged 60; died, Dec. 3, 1936, of carcinomatosis.

William Denison Morgan, Hartford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1876; member of the Connecticut State Medical Society; medical director of the Phoenix Mutual Life Insurance Company; for many years honorary chairman of the executive committee of the Hartford Hospital; aged 86; died, Dec. 17, 1936, of carcinoma of the bladder, bilateral pyelonephritis and prostatic hypertrophy.

Thomas Warren Luce ● Portsmouth, N. H.; Medical School of Maine, Portland, 1895; past president of the New Hampshire Medical Society; fellow of the American College of Surgeons; member of the New England Surgical Society; past president of the Rockingham County Medical Society; chief surgeon to the Portsmouth Hospital and consulting surgeon to the New Hampshire Memorial Hospital, Concord; aged 66; died, Dec. 11, 1936, of endocarditis.

Andrew Jackson Goodwin, Wheeling, W. Va.; University of Pennsylvania School of Medicine, Philadelphia, 1915; member of the West Virginia State Medical Association; assistant medical adviser at Cornell University, Ithaca, N. Y., 1916-1917; served during the World War; formerly on the staff of the Mayo Foundation as fellow in surgery; on the staff of the Ohio Valley General Hospital; aged 46; died, Dec. 4, 1936, of pneumonia.

John Chase Sexton, Rushville, Ind.; Medical College of Ohio, Cincinnati, 1882; member and past president of the Indiana State Medical Association; past president of the Rush County Medical Society; at one time professor of gastro-intestinal surgery, Indiana University School of Medicine, Indianapolis; owned and operated the hospital now known as the Rushville City Hospital; aged 77; died, Dec. 28, 1936.

Henry Van Velsor Holcomb ● Hempstead, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1903; fellow of the American College of Surgeons; member of the surgical staff of Nassau Hospital, Mineola, Mercy Hospital, Hempstead, South Nassau Communities Hospital, Rockville Center; aged 59; died, Dec. 23, 1936, of arteriosclerotic heart disease.

Howard Townsend Swain ● Boston; Harvard University Medical School, Boston, 1897; fellow of the American College of Surgeons; member of the New England Pediatric Society; at one time assistant in obstetrics at his alma mater; on the staffs of the Massachusetts General Hospital and the Boston Lying-in Hospital; aged 68; died, Dec. 6, 1936.

Arthur Charles Echternacht, St. Louis; State University of Iowa College of Medicine, Iowa City, 1905; member of the Illinois State Medical Society and the Radiological Society of North America; director of laboratories at the Missouri Baptist and Christian hospitals; aged 57; died suddenly, Dec. 16, 1936, of coronary thrombosis.

Henry Lord Cochran, New York; Long Island College Hospital, Brooklyn, 1879; formerly instructor in operative surgery at his alma mater; for many years examiner for the Commercial Travelers Mutual Accident Association of America; retired colonel of the national guard; aged 81; died, Dec. 28, 1936, of paralysis agitans.

James Claude Kessler, Iowa City, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; member of the Iowa State Medical Society; at one time assistant professor of dermatology at his alma mater; formerly on the staff of the University hospitals; aged 56; died, January 1, of cerebral hemorrhage.

Coleman Lovejoy Hoffman, Oak Park, Ill.; State University of Iowa College of Medicine, Iowa City, 1903; member of the Illinois State Medical Society; veteran of the Spanish-American War; aged 58; died, Dec. 17, 1936, in the West Suburban Hospital of acute nephritis, uremia and Kümmel's disease.

Edward Hofma, Grand Haven, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; formerly state senator and member of the board of education; bank president; medical officer to the Wellman expedition to the north pole; aged 77; died, Dec. 15, 1936, of arteriosclerosis.

Elmer Llewellyn Meyers ● Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1901; fellow of the American College of Surgeons; for many years member of the city board of education; aged 72; on the staff of the Wilkes-Barre General Hospital, where he died, Dec. 17, 1936, of pulmonary embolism.

Wayland Briggs Cunningham ● Port Arthur, Texas; Eclectic Medical College, Cincinnati, 1928; past president of the Lincoln County (Ky.) Medical Society; member of the Kentucky State Medical Association; aged 38; died, Dec. 6, 1936, in an automobile accident at Oakdale, La.

Eugene Howard Goodfellow, Brooklyn; Albany (N. Y.) Medical College, 1894; served during the World War; for many years connected with the Veterans Administration; aged 66; died, Dec. 27, 1936, in the New York Polyclinic Medical School and Hospital, New York, of pneumonia.

David Daniel Goldstein ● New York; University of the City of New York Medical Department, 1890; fellow of the American College of Surgeons; aged 67; on the staffs of the Sydenham Hospital and Mount Sinai Hospital, where he died, Dec. 6, 1936, of streptococcic sore throat.

William Lyman Guild, Wayne, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1884; Chicago Homeopathic Medical College, 1892; member of the Illinois State Medical Society; surgeon to the Chicago, Aurora and Elgin Railroad; aged 77; died, Dec. 18, 1936.

Roland Roderic Keiser ● Mahanoy City, Pa.; Jefferson Medical College of Philadelphia, 1923; member of the city

board of health; on the staff of the Locust Mountain State Hospital, Shenandoah; aged 37; died, Dec. 3, 1936, in the Jefferson Hospital, Philadelphia.

Genous Sanders Hodges, Marianna, Fla., Atlanta (Ga.) School of Medicine, 1912; member of the Florida Medical Association; served during the World War; county physician; formerly on the staff of the Baltzell Hospital; aged 54; died, Dec. 9, 1936, of pneumonia.

Harry Hubbard, Tiltonsville, Ohio; College of Physicians and Surgeons, Baltimore, 1899; formerly member of the state legislature of West Virginia; aged 63; on the staff of the Martins Ferry (Ohio) Hospital, where he died, Dec. 11, 1936, of coronary occlusion.

Otto Vernon Greene ● Bethel, Vt.; Baltimore Medical College, 1903; for many years health officer and town physician of Bethel; member of the staff of the Gifford Memorial Hospital, Randolph; aged 56; died, Dec. 6, 1936, of cerebral hemorrhage.

Joseph C. Higdon, Belzoni, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1896; member of the Mississippi State Medical Association; aged 69; died, Dec. 12, 1936, in the Baptist Hospital, Memphis, Tenn.

Edward Homer Kinsman, Toronto, Ont., Canada; University of Western Ontario Medical School, London, 1931; member of the American Psychiatric Association; on the staff of the Ontario Hospital; aged 37; died, Nov. 29, 1936.

Samuel D. Donovan, Dewey, Ill.; St. Louis College of Physicians and Surgeons, 1905; member of the Illinois State Medical Society; aged 53; on the staff of the Mercy Hospital, Urbana, where he died, Dec. 9, 1936, of carcinoma.

Vincent Tibbals Lathbury ● Augusta, Maine; Boston University School of Medicine, 1904; on the staff of the Augusta General Hospital; aged 57; died, Dec. 12, 1936, at Freeport, as the result of an automobile accident.

Virgil Alderson Fleenor, Mount Airy, N. C.; University of Tennessee College of Medicine, Memphis, 1934; aged 28; died, Dec. 13, 1936, in the Anson Sanatorium, Wadesboro, of injuries received in an automobile accident.

Frederick H. Ehinger, Ebenezer, N. Y.; University of Buffalo School of Medicine, 1886; member of the Medical Society of the State of New York; aged 74; died, Dec. 14, 1936, in the Mercy Hospital, Buffalo, of uremia.

Ronald Foley MacDonald Jr., Antigonish, N. S., Canada; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the board of governors of St. Francis Xavier University; aged 53; died, Dec. 17, 1936.

Jonas Albert Henry ● Pleasantville, N. J.; Howard University College of Medicine, Washington, D. C., 1931; aged 33; died, Dec. 3, 1936, in the Atlantic City (N. J.) Hospital, of acute bronchitis and chronic nephritis.

Michael Francis Grier, Philadelphia; Eastern University School of Medicine, Baltimore, 1913; formerly on the staff of the Farview (Pa.) State Hospital and the Eastern State Penitentiary; aged 55; died, Dec. 17, 1936.

George Frederick Pierce, Chicago; Trinity Medical College, Toronto, Ont., Canada, 1895; on the staff of the Garfield Park Hospital; aged 70; died, January 2, of arteriosclerosis, diabetes and gangrene of the left foot.

Maurice M. Jacobs ● Philadelphia; Universitatea din Bucuresti Facultatea de Medicina, Rumania, 1903; University of Pennsylvania Department of Medicine, Philadelphia, 1905; aged 60; died, Dec. 27, 1936.

Lawrence Pears Crawford, Quincy, Mass.; Rush Medical College, Chicago, 1904; member of the Massachusetts Medical Society; aged 61; died, Dec. 11, 1936, in the Faulkner Hospital, Boston, of cor pulmonale.

William D. Fulkerson, Huntington Park, Calif.; Missouri Medical College, St. Louis, 1893; formerly a practitioner in Trenton, Mo.; aged 74; died, Nov. 26, 1936, of coronary thrombosis and arteriosclerosis.

John Michael Murphy, Chicago; Jenner Medical College, Chicago, 1914; for many years city health inspector and at one time head of the department; aged 51; died, Dec. 30, 1936, of chronic myocarditis.

John Lacey Quinn Lauer, Elida, Ohio; Medical College of Indiana, Indianapolis, 1890; mayor of Elida; aged 68; died, Dec. 4, 1936, in the Memorial Hospital, Lima, of influenzal meningo-encephalitis.

Horace Guion Willson, Los Angeles; University of Maryland School of Medicine, Baltimore, 1902; served during the World War; aged 61; died, Nov. 24, 1936, in Winslow, Ariz., of heart disease.

Austin Flint Wood, Parksley, Va.; University College of Medicine, Richmond, 1898; member of the Medical Society of Virginia; aged 56; died, Nov. 28, 1936, of myocarditis and arteriosclerosis.

Herman Tobias Wolff ● Yonkers, N. Y.; Baltimore Medical College, 1900; on the staffs of St. John's, St. Joseph's and the Yonkers General hospitals; aged 58; died suddenly, Nov. 25, 1936.

Joseph Garceau, Shawinigan Falls, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1899; aged 65; died, Nov. 8, 1936.

John Hall Lilly, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania; aged 50; died suddenly, Dec. 2, 1936.

Tracy Farnam, East Lyme, Conn.; Columbia University College of Physicians and Surgeons, New York, 1913; served during the World War; aged 57; died, Dec. 29, 1936, in New York.

Alexander N. Caron, St. Pascal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1901; aged 67; died, Nov. 29, 1936.

William August Bryant, San Anselmo, Calif.; Cooper Medical College, San Francisco, 1884; aged 74; died, Nov. 12, 1936, of coronary occlusion, arteriosclerosis and chronic nephritis.

Lawrence Hull Bradley, Saratoga, Calif.; Hahnemann Medical College and Hospital, Chicago, 1880; aged 78; died, Nov. 11, 1936, of chronic myocarditis and arteriosclerosis.

Walter Edwin Coppedge, Alturas, Calif.; Barnes Medical College, St. Louis, 1898; connected with the Indian Service; health officer of Alturas; aged 65; died, Nov. 4, 1936.

Sylvester Forshay McKeen ● Brookline, Mass.; Harvard University Medical School, Boston, 1896; aged 63; died, Nov. 29, 1936, of cerebral embolus and coronary occlusion.

Charles Alfred Dutton, Detroit; Detroit College of Medicine, 1897; member of the Michigan State Medical Society; aged 65; died, Dec. 17, 1936, of cerebral thrombosis.

William Lowry Freeman, Tacoma, Wash.; Missouri Medical College, St. Louis, 1882; Hering Medical College, Chicago; aged 80; died, Nov. 17, 1936, of arteriosclerosis.

John Oscar Cummings, New Rochelle, N. Y.; Howard University College of Medicine, Washington, D. C., 1930; aged 40; died, Dec. 12, 1936, of lobar pneumonia.

Frederick Dracass, St. Petersburg, Fla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1886; aged 89; died, Dec. 3, 1936, of arteriosclerosis.

George Steven, Byron, Minn.; Rush Medical College, Chicago, 1903; member of the Minnesota State Medical Association; aged 57; died, Nov. 15, 1936.

George H. Woods ● Pine Grove Mills, Pa.; Jefferson Medical College of Philadelphia, 1875; aged 84; died, Nov. 23, 1936, of cardiac decompensation.

William Washington Mathis, Taylor, Miss.; Memphis (Tenn.) Hospital Medical College, 1887; aged 84; died, Nov. 30, 1936, of chronic nephritis.

Alvin Jackson Rogers, Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 85; died, Nov. 23, 1936, of coronary sclerosis.

Lewis Rutherford Morris, New York; Bellevue Hospital Medical College, New York, 1884; aged 74; died, Dec. 9, 1936, of cerebral hemorrhage.

Wilton Fields Lefavor, St. Louis; Western Homeopathic College, Cleveland, 1870; aged 90; died, Dec. 9, 1936, of angina pectoris.

Edwin M. Emrick, Shamokin, Pa.; Jefferson Medical College of Philadelphia, 1878; aged 81; died, Dec. 5, 1936, of senility.

Wylie E. Oldham, Calico Rock, Ark.; College of Physicians and Surgeons, Baltimore, 1885; aged 76; died, Nov. 19, 1936.

Julia Egbert Hoover, Cleveland; Cleveland Homeopathic Medical College, Cleveland, 1899; aged 70; died, Dec. 4, 1936.

Harry Lewis Pelle, Louisville, Ky.; Louisville and Hospital Medical College, 1908; aged 50; died, Nov. 19, 1936.

Henry Oscar Marcum, St. Charles, Ark. (licensed in Arkansas in 1903); aged 67; died, Nov. 22, 1936.

Correspondence

A SIMPLE METHOD FOR LOOSENING STUCK SYRINGES

To the Editor:—Often stuck syringes are encountered and there are no special devices available to loosen them. Unless hopelessly stuck, they may easily be loosened with materials found in any physician's office. The smallest syringe at hand, a tuberculin or a 2 cc. syringe, is filled half full of water and a one-half inch hypodermic needle is attached. The needle is passed through a thickness of rubber, such as a rubber band, and then inserted firmly into the tip of the stuck syringe. Pressure is then made on the plunger of the syringe containing water, which in turn is transmitted to the stuck plunger, forcing it loose. The smaller the area of the end of the free plunger to that of the stuck plunger, the greater the hydraulic advantage obtained. Some care should be used in attempting to free badly stuck syringes by this method.

J. B. HOPKINS, M.D., Richmond, Va.
601 State Office Building.

REDUCING FLUIDS FOR REMOVING SILVER PIGMENTATION

To the Editor:—Dr. Cornbleet, in his communication published in THE JOURNAL Dec. 12, 1936, page 1989, criticizes the use of the term "reducing fluid" with reference to the mixture of potassium ferricyanide and sodium thiosulfate used in removing silver pigmentation from the skin. I have no doubt that the writer of the answer to the query which Dr. Cornbleet criticizes used the term "reducing fluid" in the same way that it was used by Dr. Lawless and myself in our articles on the subject, that is, a photographic reducing fluid, a fluid which reduces overexposed negatives. In this sense I believe Dr. Cornbleet will grant the propriety of the expression.

On the other hand, how does Dr. Cornbleet know that the mixture used, containing 1 per cent potassium ferricyanide and 6 per cent sodium thiosulfate, is an oxidizing agent in the chemical sense? Other eminent chemists confess their uncertainty on this point. The reactions in vitro are much more complicated than the formulas offered by Dr. Cornbleet. Furthermore, the reaction in the tissue are wholly unknown. We do not know the nature of the light colored form of silver deposited in the upper cutis, which turns dark on exposure to light. Until we know this and a great deal more about the effect of tissue fluids on chemical reactions in the skin, it seems to me presumptuous to give formulas.

A. W. STILLIANS, M.D., Chicago.

SUBCUTANEOUS EMPHYSEMA IN ASTHMA

To the Editor:—In view of the rarity of cases of subcutaneous emphysema complicating asthma as reported by Sheldon and Robinson in THE JOURNAL, Dec. 5, 1936, an additional case report may be of interest:

S. R., a boy, aged 6, a home relief client, was seen Dec. 7, 1934, in an acute attack of asthma. He had been having paroxysms for the past year. The family history was negative for allergic disorders. The attack was relieved after exhibition of codeine, ephedrine and calcium, and the patient (because of financial conditions) was referred for study to an outpatient clinic. He was found sensitive to house dust, and desensitization was undertaken. The paroxysms diminished in frequency, and for seven months preceding the following occurrence he was free from symptoms.

Nov. 3, 1936, he had a severe attack of expiratory dyspnea. The following day I was called because swelling of the face had appeared. Examination revealed the dyspnea, pulmonary emphysema, râles and rhonchi of a subsiding asthmatic attack. There was a pronounced swelling of the left parotid and submaxillary regions. There was palpable crepitus over these regions as well as the anterior and posterior triangles of the neck, the left axilla and the left pectoral region. In the following two days the emphysema spread to the right pectoral region. Of especial interest is swelling and tenderness of the lower gum margins, which appeared on the second day and subsided with the other signs.

With strict rest, suppression of coughing with codeine, and ephedrine, the dyspnea and emphysema gradually cleared up in the following six days.

This case corroborates the report of Sheldon and Robinson with respect to the factors of age, occurrence after an interval free from attacks, and good prognosis.

FREDERICK BRIDGE, M.D., Brooklyn.

MYCOBACTERIUM LEPRAE

To the Editor:—In the abstracts from the *Medical Journal of Australia* published in THE JOURNAL January 2, page 78, the causative agent of lepra is referred to as "Microbacterium leprae." Misspelled words are so frequently and often unintentionally introduced into medical nomenclature that they should be corrected on every occasion. The proper designation is "Mycobacterium leprae." The organism is one of the Mycobacteriaceae. Although Hansen in 1874 identified it as a bacillus, its classification by Lehmann-Neumann has been generally accepted since 1896.

FRANK C. COMBES, M.D., New York.

GASTRIC ACIDITY AND GASTRIC ULCER

To the Editor:—In an editorial in THE JOURNAL, Dec. 19, 1936, the important relationship of gastric acidity to experimental ulcer in animals, as well as gastric and duodenal ulcer in man, seems to have been definitely shown. However, the statement "within wide limits the concentration of pepsin appears to be of no importance" justifies further discussion. Recent clinical observations of Vanzant, Osterberg, Alvarez and Rivers (*J. Clin. Investigation* **12**:557 [May] 1933) confirmed by Mullins and Flood (*ibid.* **14**:793 [Nov.] 1935) seem to indicate that peptic ulcer in man is frequently accompanied by an increase of pepsin as well as of acidity.

Animal experimentation likewise points to the probable important rôle of pepsin in the pathogenesis of ulcer. Howes, Flood and Mullins (*Surg., Gynec. & Obst.* **62**:149 [Feb.] 1936) reported that operatively produced gastric defects in cats showed a greater delay in healing in those receiving pepsin with acid, as compared to those receiving acid alone. Recent experiments reported by Matzner, Windwer, Sobel and Polayes (*Proc. Soc. Exper. Biol. & Med.* **34**:243 [March] 1936) and Matzner and Windwer (*Am. J. Digest. Dis. & Nutrition*, to be published) appear to indicate that pepsin in an acid medium is far more effective than hydrochloric acid alone in the experimental production of gastric ulcer in rats.

While the corrosive action of hydrochloric acid on living tissue appears to have been established, experimental evidence would seem to indicate that pepsin in an acid medium is the more important factor. Further study in the control of pepsin secretion in conjunction with that of gastric acidity should prove of interest.

MILTON J. MATZNER, M.D.
CHARLES WINDWER, M.D.
Brooklyn.
Department of Gastro-Enterology,
Jewish Hospital.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FOOD VALUE OF EGGS

To the Editor:—Eggnogs as a source of extra nourishment for patients run into a lot of money by virtue of the cost of eggs. Some textbooks say that raw eggs have little or no food value and are mainly of use as a cathartic and also state that eggs are most assimilable when thoroughly cooked. Will you please give me the present opinion on the food value of raw eggs and mention any articles to which one might refer.

WALTER M. PAMPHILON, M.D., Willard, N. Y.

ANSWER.—The analysis of a whole hen's egg reveals that it contains 13.4 per cent of protein and 10.5 per cent of fat. Hence an average egg weighing 50 Gm. presents 6.78 Gm. of protein and 5.2 Gm. of fat, totaling 75 calories. The mineral constituents of a whole egg are as follows: calcium 68, phosphorus 224, iron 2.52, copper 0.23, magnesium 0.03, chlorine 106, chlorine as sodium chloride 175. The iodine content in parts per billion as established in Ohio on the raw basis is 108 per egg. The vitamin value is as follows: vitamin A, excellent; vitamin B, poor to good; vitamin C, questionably negative; vitamin G, excellent, vitamin D, good. (Bridges Milton: Food and Beverage Analyses, Philadelphia, Lea & Febiger, 1935.) The digestibility of the egg protein and fat has been subjected to much buffeting, but it is well established today that the caloric yield to the human being of raw and soft-cooked eggs is close to the analytic observations.

PAINFUL BREAST

To the Editor:—A white woman, aged 26, who has a child 3 years of age, complains of pain in the right breast and occipital headache. The breast is normal, without inflammation, lumps or swelling. The past history is negative. The breast is well developed and seems to be the same as the left. Physical examination is negative with the exception of slight tenderness in the right lower quadrant of the abdomen and the pelvis (possibly appendix and ovary). What is the probable cause of the pain in the breast and what treatment is recommended? Is it possible for ovarian disease to cause this breast and head pain? Please omit name.

M.D., Kansas.

ANSWER.—There are two possible causes for the pain in the case described. The first is psychic; the second has to do with actual changes in the breast frequently associated with ovarian disturbances. The presence or absence of psychic factors should be established by a careful history. Many patients harboring the fear of cancer complain of painful breasts. The other condition, which is commonly known as "chronic mastitis" but which is actually caused either by an edema of the tissues or by an actual hyperplasia of the ducts and acini or perhaps by a combination of the two, it is difficult to correct. Support of a pendulous breast is of some assistance.

When the cause is mainly psychic, assurance that the patient is not suffering from cancer and that the pain is not related to cancer is of great assistance.

PERSISTENT SORE THROAT

To the Editor:—I have a patient, a World War veteran, who for the past two months has had a pronounced soreness of the left side of his throat. His tonsils have been removed and there are no tags left which could cause this condition. Examination of the throat reveals nothing except that the entire throat is red and congested. There is no enlargement of the cervical glands of the neck, and the vocal cords appear normal. Two weeks ago he had an infected tooth removed but the rest of the teeth appear normal, although they have not been roentgenographed. The patient is worried for fear that he may have the beginning of a malignant condition. How can I relieve his mind on this point? Is there any test for such a condition? What might be the cause of the continuous soreness on one side of the throat while the other side is free from symptoms? Please omit name.

M.D., Michigan.

ANSWER.—It is not stated whether the infected tooth that was removed was on the side on which the throat now is involved, but since the "soreness" was present some time before the dental extraction it does not seem reasonable to ascribe it to the infected tooth. It is possible that a few small deep glands (provided the tooth was on the same side as the inflamed throat) might have been present prior to the extraction and be a contributing cause to the painful condition. There is a possibility that some neoplasm in its early stage may be present high in the nasopharynx on the affected side or in the pyriform sinus lateral to the larynx. In a word, the patient must be very carefully examined so far as the posterior portion of his nose, his nasopharynx, the beginning of the esophagus, the larynx and the pyriform sinus regions are concerned. Should all these factors, namely, the mouth and other structures named, be eliminated, there is a possibility that some form of neurosis may be present. Perhaps a mild sedative internally and the use of ice pellets in the mouth may have a mitigating action on the "soreness," but a throat examination is most essential.

HEMOPTYSIS AFTER EVULSION OF PHRENIC NERVE

To the Editor:—I have followed up 399 cases of phrenic evulsion during the last three years, 187 on the right right and 212 on the left side. In one case of evulsion of the right phrenic nerve and in seventeen cases of evulsion of the left phrenic nerve, rather severe hemoptysis occurred after the operation, usually in the second week, although most of the patients gave no history of having spit blood at any time previously. Why should phrenic evulsion on the left side lead to hemoptysis? In three cases, in which artificial pneumothorax had been tried and failed prior to the phrenic evulsion, it was induced after the operation to control the bleeding, with success. Is it that the phrenic evulsion released some adhesions and made both the hemoptysis and the induction of artificial pneumothorax possible? If so, why should it happen only on the left side? I shall be thankful for your explanation and for any references, as I could not find any. Please omit name.

M.D., India.

ANSWER.—Hemoptysis following evulsion of the phrenic nerve has not been reported as a frequent occurrence, although attention has been called to it by a number of physicians. The number of cases reported that occur within a week or so following the operation is hardly enough to remove the occurrence from the realm of coincidence. Approximately 35 to 50 per cent of patients with clinical pulmonary tuberculosis have hemoptysis at some time during the course of their disease without any surgery being performed. The phrenic nerve is in apposition with the pleura as it courses through the thorax on each side. Therefore, with involvement of the mediastinal pleura and subjacent lung, adhesions may form. If the nerve sheath becomes adherent, it is possible through tension to produce injury to the adjacent tuberculous lung tissue sufficiently extensive to result in hemoptysis.

Brunner (*Therap. d. Gegenw.* **65**:488 [Nov.] 1924) has suggested that in some cases hemoptysis following evulsion of the phrenic nerve may be due to passive congestion of the lung which occurs with the elevation of the diaphragm. At present there is no explanation as to why hemoptysis should have occurred more frequently when the operation was performed on the left side. It is not unusual to make several unsuccessful attempts at artificial pneumothorax to be followed by a successful one. It seems more probable that the success in three cases in which artificial pneumothorax was induced after phrenic evulsion was due to the site of puncture of the parietal pleura rather than to the release of adhesions due to evulsion of the phrenic nerve.

COLORED SWEAT, OR CHROMIDROSIS

To the Editor:—What is the cause of a greenish yellow stain to the vest by perspiration; especially that of the axilla and thorax? Sal soda is used in washing the garments.

H. A. HASKELL, M.D., Windsor, Calif.

ANSWER.—The staining from sweat may be genuine colored sweat, chromidrosis, or pseudochromidrosis. The first condition is rare, occurring usually in neurotic women, the sweat being brown, blue or reddish. Clapton and recently Cole saw green sweat in workers in copper. Blue sweat is usually colorless on appearing at the skin surface and then turns blue, supposedly by oxidation of indican. Genuine chromidrosis is hard to prove, for simulation is often practiced. Spring covered the suspected area with collodion. When the colored sweat reappeared under the collodion, he was assured that the case was a real chromidrosis.

The treatment of chromidrosis depends on finding the cause, which, except in the cases cited of copper workers, is difficult. The female sex, constipation and a neurotic temperament, the etiology usually given, can hardly be called helpful.

Much commoner is pseudochromidrosis, in which the sweat is colored by a growth on the hair of the chest, pubes, inner side of the thigh, the backs of the hands, the axilla, or other portions of the skin. This growth consists of a fungus, Trichomyces palmellina or T. nodosa, which forms a gluelike mass encasing the hair as a cuff or as nodes on it. This does not form near

the skin and never enters the follicle. The growth penetrates the hair to some degree, causing it to become brittle and often break. The growth of the fungus alone causes a yellow coloration. A bacillus or coccus-like growth added to it causes red or brownish.

For pseudochromidrosis it is necessary only to give some antiseptic, such as mercury bichloride 1:1,000 in alcohol. Dabbed on once or twice daily, it soon destroys the growth.

ETIOLOGY OF MISCARRIAGES

To the Editor:—A woman, aged 30, height 5 feet 5 inches (165 cm.), weight 110 pounds (50 Kg.), of exceedingly nervous type, has been married ten years and has no children. Numerous examinations have been repeatedly negative. Blood Wassermann tests and urinalyses have always been negative. The basal metabolic rate a year ago was minus 22. Thyroid therapy was instituted and six months later the basal metabolic rate was minus 10. The patient is still on thyroid, 2 grains (0.13 Gm.) daily. Three years ago the patient had a miscarriage at two months. Two years ago another miscarriage occurred at three months. Six months ago there was another miscarriage at three months. Both husband and wife desire children. Prostatic massage of the husband revealed a chronic prostatitis of unknown duration. It is unquestionably nongonorrheal. The husband is 30 years of age. Examination of his semen (condom specimen) shows numerous actively motile spermatozoa. Is it possible for the prostatitis to cause the miscarriages? Can the hypothyroidism alone be the disturbing element? What are the chances of carrying a pregnancy to term? Please omit name and address.

M.D., Kentucky.

ANSWER.—The fact that the patient does become pregnant is definitely in her favor. Without a question, the hypothyroidism in the patient and the prostatitis in the husband can be factors in the production of abortion, the former because of imbalance in the endocrine chain and the latter because of the possibility of having the spermatozoa affected and thus resulting in an improperly formed fetus. The hypothyroidism should have been adequately controlled by the use of thyroid.

The possibility of carrying the patient to term is problematic, but efforts in that direction can be made which should increase the chance for a happy termination.

Every effort should be made to clear up the prostatitis in the husband. In the event that the patient should become pregnant she must be put to bed for the first five months, with all exercise and sexual intercourse eliminated. Recent work tends to show that progesterone (corpus luteum hormone) is a valuable aid in the treatment of such patients, this hormone acting to cut down on uterine irritability and activity. Progesterone should be used in doses of 1 international unit every other day, hypodermically, for the first five months and at any time thereafter that signs of impending abortion or of premature labor present themselves.

CHRONIC PAROTITIS

To the Editor:—A 6 year old girl has had intermittent attacks of pain and swelling in the parotid glands accompanied by a temperature rise up to 102 F. every two or three months for the past two years. The condition lasts from three to twelve days and occurs most often on the right side but has been bilateral and on the left side only twice. Pus can be expressed from the duct, but smears are negative for bacteria. X-ray films and probing of the ducts have not revealed any calculi. The past history is entirely negative except for a tonsillectomy, which was done two months before the first attack. Please give me some information as to diagnosis and treatment of this condition.

JOHN H. CLARK, M.D., Vernal, Utah.

ANSWER.—The patient is probably afflicted with the symptom complex known as "chronic Sialodochoparotitis with recurrent subacute exacerbations." The swelling of the parotid gland or glands in this condition has a tendency to recur and may be slightly painful. It may last from several hours to several days or weeks, the gland remaining moderately enlarged between exacerbations. In some instances the swelling appears in the morning and disappears after breakfast. The salivary secretion is usually not affected, although some patients may complain of excessive discharge of pus and saliva from the affected gland. There is as a rule no febrile reaction, and the general health is apparently unaffected. The patient may learn to obtain relief by pressure over the gland with the resultant discharge of pus or saliva, or, as in the condition of "fibrinous sialodochitis," by removal of a plug of fibrin from the duct.

There is usually no apparent predisposing cause, although cases following tonsillectomy, tonsillitis and tooth extraction have been reported.

On examination during the recurrences, one finds an enlarged, firm, occasionally nodular gland, which may be slightly tender to pressure. The overlying skin generally shows no changes, but at times it has been observed to be red or even fluctuant. The duct is not palpable unless it is stenosed or there has been a long standing fibrous sialodochitis. The duct opening and papilla may or may not be red. Pressure on the gland may cause the appearance of pus, a cylindric mass of fibrin and pus, cloudy saliva or unaltered saliva.

Therapy may be either nonsurgical or surgical in nature. Nonsurgical procedures would include dilatation of the duct and massage of the gland, general care, eradication of foci of infection, such as infected teeth, iodides, injection of mild antiseptics or irritants (as iodized poppy-seed oil or mercurochrome) into the duct, x-rays, epinephrine, and foreign protein therapy.

Surgical procedures might indicate slitting of the duct, slitting or removal of the stenotic portion of the duct, extirpation of the auriculotemporal nerve with resultant atrophy of the gland, or removal of the gland.

A report of such a case, with complete literature, may be found in the article by Sol Londe and Mort D. Pelz (*J. Pediat.* **2**:594 [May] 1933).

DIAGNOSIS OF CHONDROMA

To the Editor:—A young married woman, aged 23, and the mother of one child, aged 11 months, has an enlargement at the sternal end of the third left rib. This was noticed about four years ago as a small lump and was slightly tender to pressure. She consulted a competent Chicago surgeon, who had an x-ray examination made by a competent roentgenologist. No pathologic condition was visualized, no diagnosis was made, and nothing was done. Since that time the lump has slowly enlarged until now it is about the size of half-dollar piece (30 mm.) and is plainly visible on inspection. There is tenderness to pressure, which varies from time to time, and also there is slight pain in this region occasionally. The enlargement is smooth; the overlying skn is attached or discolored. No cervical or axillary lymph glands are palpable. The breast tissue appears to be normal. A short time ago another surgeon was consulted, who roentgenographed the chest in this region. As before, nothing was visible. No diagnosis was made. The past history of the patient is as follows: Tonsillectomy was done when she was a child, appendectomy in 1931, gallbladder drainage in 1932, and cholecystectomy in 1933 for chronic cholecystitis. The Wassermann reaction is negative. Since the surgery mentioned her health has been good, except that in the past year she has become easily fatigued from ordinary housework. Her weight is 110 pounds (50 Kg.), but this varies between 110 and 115 pounds (52 Kg.). Her pregnancy was uneventful and delivery was normal. Please omit name.

M.D., Illinois.

ANSWER.—In 213 collected cases of tumors of the ribs and sternum (Parham, Lurd and Hedblom), cited by Lewis, Dean: (Heuer, G. J., and Andrus, W. De W.: Tumors and Cysts of the Thorax, in Practice of Surgery, Hagerstown, Md., W. F. Prior Company, Inc., 1930, vol. 5, chapter 5), sarcoma occurred in 131, chondroma in forty, carcinoma in twenty-four, fibroma in five, exostosis in three and gumma in one. The slow enlargement of the tumor in this case, its location, its smooth contour, and the relative absence of symptoms, lead to the conclusion that it is probably a benign chondroma. In the Mayo series, however, four cases subjected to radical operation and seven subjected to biopsy proved to be inflammatory lesions.

Accurate diagnosis can probably be made only after biopsy. Treatment for a primary tumor, whether benign or malignant, would be by excision of the sternal portion of this third rib.

EFFECTS OF ETHANE AND METHANE ON NASAL MUCOUS MEMBRANES

To the Editor:—Could you give me information regarding the effect of ethane and methane gases on the nasal mucous membranes? I have in mind a patient with a severe atrophic rhinitis who has been working in natural gas fumes for several years. I feel that the patient's work is probably deleterious to his nose. Can you give me any confirmation in this regard?

J. H. BRISTOW, M.D., Bay City, Mich.

ANSWER.—Ethane (C_2H_6) and methane (CH_4) are common constituents of illuminating gas. Methane is the principal component of fire damp in coal mines. It is stated not to have any physiologic effect on man. Ethane is ordinarily not found in fire damp but has been said to be present in certain German mines. As fire damp is not known to have a direct action on man, ethane is probably harmless. One may breathe an atmosphere of methane and oxygen for a long time without apparent deleterious effects provided the amount of oxygen remains above 21 per cent. References are:

Kober, C. M., and Hayhurst, E. R.: Industrial Health, Philadelphia, P. Blakiston's Sons & Co., 1924.

Oliver, Thomas: Dangerous Trades, London, John Murray, 1902.

Neither the rhinologic literature nor that pertaining to industrial hazards makes mention of irritating or deleterious effects of these gases on the mucous membranes of the nose.

CHRONIC GONORRHEA

To the Editor:—I have a patient who had gonorrhea three years ago. He states that he was well after treatment of three months, which included sounds, but shreds always persisted. Five weeks ago he commenced to notice a morning drop. My examination revealed a mild prostatitis (from 20 to 25 pus cells to the high power field). The prostate was normal to palpation, but the seminal vesicles were palpable. The urethra did not show strictures or infiltrations. The two glass test revealed numerous shreds in the first glass, but the second was entirely clear. Microscopic examination of the shreds revealed many pus cells but no gonococcus organisms after many repetitions. Treatment has been biweekly seminal vesicle prostatic massages for four weeks with irrigations, and at the present time the prostatic secretion contains only about 8 to 10 pus cells per high power field. After four weeks of massages (last week) I started with a 28 sound and had no difficulty, but after the sound the shreds have increased. The morning drop has never diminished. Irrigations were even stopped in the belief that there was overtreatment. Further treatment will be larger sounds gradually once a week with continued biweekly massages for two more months. Will the morning drop disappear with the advent of the sounds? What will be the fate of the shreds? The man has persisted in drinking and indulgence in sexual intercourse but has not infected any one. Irrigations have been with potassium permanganate 1:8,000 and strong protein silver 2 per cent. Any suggestions, as soon as possible, will be appreciated. Please omit name.

M.D., Illinois.

ANSWER.—The morning drop in itself is of little significance as it is a sign of urethral irritation. In many cases this irritation consists of vigorous daily stripping of the urethra in search of a morning drop, which may only be a drop of mucus which is the normal secretion of the urethra. If any doubt as to the presence of gonococci remains in the mind of either the doctor or the patient, cultures after the method of McLeod (*J. Path. & Bact.* **39**:221 [July] 1934) as modified by Thompson (*Am. J. Clin. Path.* **5**:313 [July] 1935) are highly reliable.

Urinary shreds are of little significance. They are probably in this case casts of prostatic ducts and may persist for many years. Sometimes if the prostatic ducts are saucerized after the method of Thompson and Cook (THE JOURNAL, March 9, 1935, p. 805) the shreds will disappear.

In this case all treatment can be stopped and the patient instructed to refrain from stripping the urethra and from alcohol. If symptoms persist, a urethroscopic examination should be done. The amount of prostatitis should be rechecked in two months.

TUBERCULOSIS IN DOMESTIC ANIMALS

To the Editor:—Are dogs and cats susceptible to tuberculosis? If so, might the disease in either of these animals take a chronic pulmonary form with cough and the expectoration of sputum containing tubercle bacilli? Please omit name and address.

M.D., Colorado.

ANSWER.—Dogs and cats contract tuberculosis from both the human and the bovine type of tubercle bacilli. However, the dog manifests a strong resistance against the avian type of tubercle bacillus, as shown by the extensive experiments of Feldman (*J. Am. Vet. M. A.* **76**:399 [March] 1930; *Am. J. Path.* **7**:147 [March] 1931). He introduced tubercle bacilli of the avian type by various methods, such as inoculation and feeding of tuberculous chickens, into the bodies of fifty-four dogs. At the end of a year in those animals which had been inoculated intraperitoneally or intrabronchially there could be found no evidence of tuberculosis. Of ten dogs with tubercle bacilli introduced directly into the blood stream, one developed tuberculosis. Among thirty dogs fed on tuberculous material, microscopic lesions suggestive of tuberculosis were found in only a few. It was only when tubercle bacilli of the avian type were introduced directly into the cerebral tissues that all animals developed tuberculous lesions that were fatal.

In Europe, tuberculosis caused by the human and bovine types of tubercle bacilli is estimated to be present in as many as 5 per cent of the dogs. Petit (*Rec. de méd. vet.*, 1900, pp. 342, 405; 1901, pp. 5, 85, 162; *Presse méd.*, Aug. 12, 1925, p. 1082) reported that from 1900 to 1904 in France tuberculosis among dogs increased from 4.57 per cent to 9.11 per cent. Douville (*Rec. gén. de méd. vet.*, May 1, 1914) found approximately 4 per cent of the dogs tuberculous and points out that race and age of dogs has no influence on the disease. However, he calls attention to the sources of infection, such as public drinking places and cafés, where tuberculous persons expectorate on the floors and the dogs consume the sputum. In fact, among 100 tuberculous dogs, fifty-one belonged to the proprietors of such places, while twenty-three had for a long time been in contact with persons suffering from tuberculosis. Douville has pointed out that approximately 1 per cent of the cats of large cities are suffering from tuberculosis. In dogs the human type of tubercle bacillus is found more frequently than the bovine type, whereas in cats the bovine type is more frequently seen, probably because of their greater consumption of milk.

In this country not many figures are available, but in one group of postmortem examinations, consisting of 1,548 dogs, tuberculosis was found in approximately 1 per cent. The lungs are frequently attacked and this, of course, makes the tuberculous dog or cat an unsafe associate for both adults and children.

TREATMENT OF CONGENITAL SYPHILIS

To the Editor:—I have under my care and treatment a patient (divorced) who has 4 plus Kolmer, Wassermann and Kline reactions. A blood test of her 10 year old boy gave Kolmer and Wassermann negative reactions but a 2 plus positive Kline reaction. What prognosis can I give the mother and what would be the best treatment? Please omit name.

M.D., Minnesota.

ANSWER.—Even though the child's mother has syphilis, a single 2 plus Kline reaction is not sufficient evidence on which to base a diagnosis of congenital syphilis. Not only should the blood tests be repeated, but other procedures such as the Kahn and Hinton technics should be employed as a check against the sensitive Kline technic. It is possible for a child with congenital syphilis to reach the age of 10 without manifesting any evidence of the disease except a weakly positive flocculation test. On the other hand, it would seem unwise as well as definitely unwarranted to make a diagnosis of congenital syphilis on such slim evidence as is presented by this patient. If, on repetition, the tests are found to be positive, the child should be treated by being given a series of courses of arsphenamine or neoarsphenamine and a bismuth preparation. If the spinal fluid is found to be negative, the prognosis is more favorable. It does not seem advisable to attempt to outline in this limited space a complete course of treatment for a child with congenital syphilis, and for such information the inquirer is referred to one of the newly published textbooks, such as the one by Stokes or the volume more recently prepared by Moore.

URINATION DURING INTERCOURSE

To the Editor:—A healthy woman, aged 26 (nulliparous) complains of inability to retain urine when having intercourse with her husband. This is true even when the bladder has been recently emptied. The sensation is quite pleasurable at the time of micturition. Is this unusual or pathologic? Please omit name and address.

M.D., Massachusetts.

ANSWER.—The condition is unusual and pathologic. It is necessary to examine the urethra, as at times there are polypi or other abnormal conditions, so that the pressure of the penis against this part during connection gives the impulse to urination. It must be noted that the urethra in the female is an important source of erotic sensation, for which reason girls and women who masturbate often do so by sticking a hairpin, pencil or similar object into the urethra. In case nothing pathologic (even a mere congestion) is found in the urethra or bladder neck, the condition must be considered a neurosis and treated accordingly.

ELECTROTHERAPY FOR CORNEAL ULCERS

To the Editor:—Please indicate the status of electrotherapy with reference to corneal ulcers, mentioning the type of apparatus used in electrocoagulation, fulguration, cauterization or what not.

LUCIEN BROWN, M.D., Gadsden, Ala.

ANSWER.—The following procedures of electrotherapy have gained fairly universal recognition among ophthalmologists for use in corneal ulcers:

Ionization with a solution of zinc salt under 1.5 to 3 milliamperes of current has been most favorably reported on and in some clinics is standard practice. Any standard apparatus is used. Ionization with atropine sulfate is also used in case of poor pupillary dilatation.

Cauterization of a corneal ulcer is a standard procedure. Any cautery tip that can be brought to a cherry red heat by electrical means will suffice. Cauterization or, rather, baking with a lower degree of regulated heat over a longer period of time, such as with the Shahan thermophore, is an accepted measure.

Cauterization with diathermy is too dangerous a procedure. Short wave diathermy for the localized elevation of temperature is an accepted method that has proved satisfactory. Any good short wave diathermy apparatus or induction apparatus will suffice.

Fulguration is too dangerous.

GASTRIC PSYCHONEUROSIS

To the Editor:—I have a case that has puzzled me and many others. A man, aged 51, was always healthy until two years ago, when he noticed inability to breathe deeply. He does not have dyspnea when working, but after meals when quiet he feels a fulness. He used to get relief on raising gas, but now he gets no relief, do what he may. He has been to many clinics. Stomach examinations reveal no organic disease of any kind, every organ appearing normal. Atropine gave some relief. Bromide and alkalis gave temporary relief. There is no pain. The patient's weight is 175 pounds (79 Kg.), height 6 feet (183 cm.). He has a strong physique. He is very nervous about himself. He says he must get relief or he will die. The attacks are worse when he is nervous and worse after a hearty meal. There seems to be neurosis of the pneumogastric nerve. He gets palpitation of the heart often. He is a dredging engineer, doing clerical work, drawing and blue prints. Motor action of the stomach is good at all times—overactive. The stools and urine are normal. There is patency of the pylorus. No obstruction exists. Could it be neuritis of the pneumogastric nerve? Do not use my name.

M.D., California.

ANSWER.—Physicians who have much to do with the treatment of psychoneuroses are well acquainted with the syndrome described. The patient first complains of shortness of breath, but a little questioning soon reveals the fact that the trouble does not come with exertion, and the cardiac reserve is excellent. The real trouble is that the patient has the feeling that he can't take a deep breath.

The trouble commonly comes at times when the patient is quiet and perhaps in bed. In many cases, as in this one, the patient also has a cardiac neurosis with palpitation. Or in many cases he goes to the gastro-enterologist to get relief because of air swallowing or some other form of gastrointestinal neurosis.

So far as is known there is no organic basis for this trouble and it usually disappears as soon as the patient can be convinced that it is purely an annoyance without any danger whatever. The patient can be assured that no one ever died of this or came to any bad end.

At times it might help to give some bromides, but the main reliance should be placed on reassurance and on getting the patient to see the true nature of his trouble. Rather typical of these cases is the man's statement that he must get relief or he will die. Once such people are convinced that the symptom is of no importance, they lose interest in it. The more the patient goes to physicians, the worse he is likely to be.

DIFFERENTIAL DIAGNOSIS OF DISEASE OF NERVOUS SYSTEM

To the Editor:—A woman, aged 34, suffers from profound tiredness, a feeling of sand under the skin of the finger tips, tingling underneath the tongue, and modified similar sensations in the soles of the feet and in the toes. She is well nourished and examination gives generally negative results except for the following: The blood pressure is 100 systolic, 60 diastolic. The knee jerk and the biceps and triceps reflexes are absent. There is a suggestive Romberg sign. The Wassermann reaction is negative, as are also sensations of pain and touch. The blood picture is as follows: hemoglobin, 68 per cent; white blood cells, 5,100; red blood cells, 4,740,000; polymorphonuclears, 29 per cent; lymphocytes, 66 per cent; mononuclears, 5 per cent; color index, 0.72. The red cells are pale and show variation in size and shape. What could be the possibilities in such a picture? Please omit name.

M.D., Maryland.

ANSWER.—These data are insufficient for a diagnosis. The low blood pressure and high lymphocyte count may mean some endocrine disorder. If all tendon reflexes are absent, one might think of tabes or multiple neuritis. If the pupils do not react to light, the spinal fluid should be examined. In spite of the normal blood count, a diagnosis of combined cord degeneration would be suggested in case there is no free hydrochloric acid in the stomach contents. A gastric analysis after a test meal is strongly recommended.

ADAMS-STOKES SYNDROME

To the Editor:—In Queries and Minor Notes in THE JOURNAL, Aug. 13, 1936, "Tobacco and Heart Disease," should not Stokes-Adams syndrome be considered with a pulse of 56? Please omit name.

M.D., Illinois.

ANSWER.—The possibility of an attack of the Adams-Stokes syndrome in this case is remote. However, it should be thought of in every instance of syncope not readily explained. The points against its occurrence here are, first, the fact that the pulse was reported to have been very slow at any time (a rate of 56 is frequently found normally); second, the fact that the electrocardiogram showed apparently no evidence of delayed auriculoventricular conduction when it was taken shortly after this attack; and, third, the great infrequency of the Adams-Stokes syndrome as a cause of syncope. It is a possible but rare coincidence to have paroxysmal heart block responsible for syncope in a person who shows no electrocardiographic evidence of heart block between attacks.

PHOBIA AND NEURITIS

To the Editor:—I have under my care at present a white man, aged 49, married, a merchant, who has been complaining of a tingling and burning sensation over the hypothenar eminence of both hands since January 1936. He states that the symptoms first started with a burning sensation under the fingernails of both hands associated with brittle, longitudinally grooved nails, which broke off easily. The sensation of the tingling often involves the ulnar half of the little fingers and the tip of all the other fingers. At times the fingers feel drawn, as if they had been soaked in hot water for some time. Since the onset of the symptoms, the patient has complained also of excessive salivation, which leaves a salty taste. The past history is essentially negative except for a tonsillectomy and adenoidectomy, and also incision and drainage of a perianal abscess in January 1936. Laboratory work including urine, blood count and the Wassermann test all give clinically negative results. The blood pressure is 120 systolic, 85 diastolic. Physical examination, with the exception of a well defined reddening over both hypothenar eminences, shows no evidence of any defect. One thing that I failed to mention in the past history was the fact that the patient developed a phobia of having a barber apply a razor to his face or neck. This fear began about three years ago without there being any given cause or reason. Since this phobia set in the patient states that he has never really felt right. I would appreciate any information, advice or procedures that you can offer me in reaching a diagnosis and treatment for relief of the symptoms. Kindly omit name and address.

M.D., Pennsylvania.

ANSWER.—The phobia of having a barber shave him is a matter for detailed psychiatric study, during which the factors individual to the patient and having a possible relation to his fears must be worked out. The tingling and redness of the ulnar surfaces of the hands suggest an occupational type of neuritis. It may be that the patient performs some routine maneuver which implicates the ulnar nerve at the wrist or even at the elbow.

EXCITED STATES IN INSANITY

To the Editor:—My colleagues and I, working in a medical hospital under state supervision, have frequently been troubled by the problem as to what medication to use in the control of patients who are exceedingly active either because of a manic condition or because of the extreme agitation of involutional psychosis. We were astounded to learn that the effective intravenous dose of one recommended medication was $1.40. Of course, economy is a primary consideration and we would be very glad if you would give us your idea of an effective agent which would be inexpensive and would lend itself to oral, intramuscular or intravenous use. A medication of prolonged action, low toxicity and lending itself to easy administration would be of tremendous value in this type of work. There is such a welter of medicaments put out by various firms that it is difficult to choose wisely and your assistance would be greatly appreciated. WILLIAM K. MCCANDLISS, M.D., Trenton, N. J.

ANSWER.—An economical and efficient treatment of excited states in the insane is to give 15 cc. or more of paraldehyde in olive oil or liquid petrolatum oil by rectum. Pure paraldehyde may be given in 4 cc. doses intravenously, but the injection must be given very cautiously in the course of four or five minutes, and only by a physician. A combination of scopolamine hydrobromide and morphine hypodermically is usually effective. For extreme outbreaks of fury and violence a hypodermic injection of apomorphine is most effective, and the disagreeable after-effect is likely to make a prolonged impression on the patient.

ETIOLOGY AND PROPHYLAXIS OF ROUND SHOULDERS

To the Editor:—A 7 year old boy, in excellent physical condition, more robust and vigorous than the average for his age, and with a negative past history, is gradually developing a tendency to sit round shouldered. The father is quite round shouldered (but can pull himself erect) both sitting and walking; the father's father and grandfather had the same habitual postural defect. The father is worried and I would greatly like to help him. Your suggestions will be greatly appreciated. If published, please omit name.

M.D., Illinois.

ANSWER.—A 7 year old boy in excellent physical condition whose father and grandfather had round shoulders ought to have a complete physical examination. There should be roentgenograms made of the whole spine to discover whether or not there are any disturbances in the formation or development of the vertebral bodies.

Round shoulders may be a result of eye and ear disturbances; also disturbances in the upper respiratory tract such as enlarged adenoids or tonsils, bad postural habits, and muscular imbalance. Round shoulders follow fatigue subsequent to long continued illnesses. They are also seen in cases of chronic foot strain.

PERIOSTITIS AND OSTEOMYELITIS

To the Editor:—A man, aged 40, had a severe contusion over the left tibia about twenty years ago. A periostitis developed and the leg was incised and the bone scraped. This was repeated several times until healing took place. At the present time the slightest bump to this area causes a breakdown of the tissue, which will not heal readily. Small pieces of bone protrude through the wound and bone has to be removed. His last injury was in December, and the wounds still drain a serous material. His general condition is good and x-ray examination of the bone shows no evidence of destruction. Any suggestions as to what is taking place and some means of helping to heal the injured areas will be deeply appreciated. Please omit name.

M.D., Ohio.

ANSWER.—The history of this patient, aged 40, with an injury involving the tibia of twenty years' duration, complicated by periostitis, repeated breaking down of the wound on slight injury, and several operations, is not unusual. Frequently following periostitis and osteomyelitis the tissues over the shin are left so thin and the vascular supply is so deficient that they permit breaking down of the scar tissue on the slightest provocation. When these injuries are more severe and infection is present, fragments of bone may be discharged. In long standing cases of this type it is always well to exclude syphilis. Occasionally ulcers develop and when present for long periods may become malignant (epithelioma).

It would be advisable for the patient to wear some form of a guard to protect the leg from injury. Surgical treatment, in an effort to transplant healthy skin in the affected area, is of value in giving such patients relief.

OSTEO-ARTHRITIS

To the Editor:—A white man, aged 60, robust, had an automobile accident in which he turned over in the car. Sometime later he complained of some pains in his back. This occurred about fifteen years ago. About ten years ago he had a peritonsillar abscess, which was promptly drained. Two years ago he had malaria, at which time he had a temperature of 104 and complained of severe pains in his back. Since then he has complained more or less of these. The last two weeks he has suffered severe pains on moving and I advised him to have an x-ray examination of his lumbar spine. This revealed marked osteo-arthritis of the lumbar and thoracic spine, spur formation with bridging and a beginning ankylosing spondylitis, and a phlebolith on the left but no opaque stones in the biliary tract. Kindly omit name.

M.D., Tennessee.

ANSWER.—Trauma may be a factor in the development of osteo-arthritis. Focal infection, while rarely of primary etiologic importance, may be a contributory factor. After spur formation with bridging and beginning ankylosis, complete anatomic or functional recovery cannot be hoped for. Rest, either complete as in a cast or partial as obtained by ambulatory support, may be expected to add to the patient's comfort, while activity tends to aggravate the symptoms. From four to six weeks' rest in bed either in a plaster cast or on a Bradford frame is advisable if the patient will agree to it. This should be followed by the application of a good back brace, which maintains the spine in the best possible position for function so that if or when ankylosis does occur, deformity may at least be minimized. Heat and massage may be soothing, but salicylates are of little value as a rule. Vaccine injections or solutions containing sulfur compounds or gold salts offer little hope for correcting or alleviating a situation in which osseous changes have become as marked as those described.

BLOOD TRANSFUSION IN INFANCY

To the Editor:—Kindly send me information as to the site of injection usually preferred in a blood transfusion in an infant 3 weeks of age; also the site most frequently used in an infant, and whether the median basilic or cephalic vein is ever or rarely used for a blood transfusion in an infant 3 weeks old. Is the median basilic vein in a 3 weeks old infant large enough to admit a 20 gage needle for a blood transfusion? If this is to be published, kindly withhold name.

M.D., New York.

ANSWER.—The veins most frequently used for blood transfusion in a 3 weeks old infant are those of the arm, ankle and scalp, and the external jugular vein. The longitudinal sinus has also been used for intravenous injections. The sites most frequently used when the needle is inserted without exposing the vein by incision are the veins in the cubital fossae, the external jugulars and the scalp veins. If incision and exposure of the vein are abused, an ankle vein, preferably the saphena magna, which may be found just anterior to the internal malleous, is the site of preference.

Number 18 or 20 gage needles are recommended, though for small veins a needle as small as gage 26 may be used successfully. As a 3 weeks old infant may vary in weight from 5 to 10 pounds (2.3 to 4.5 Kg.) with correspondingly smaller or larger veins, it would be necessary to judge the gage of the needle for each individual case.

CORRECTION OF FACIAL DEFECT

To the Editor:—A young woman has a rather unsightly hollow on her forehead just above the root of the nose between the eyebrows. An experimental injection of about 1 cc. of saline solution subcutaneously makes a marked improvement in her appearance. Can you advise me of anything that might be injected to remain permanently? I thought of heavy mineral oil, of wax, and of making a small incision through the eyebrow and inserting a little silver plate. Can you help me?

M.D., British Columbia.

ANSWER.—The introduction of any foreign material for cosmetic correction is unsound and dangerous. This is particularly true of so-called fillers that contain a paraffin base.

The correction of this defect may be simply and permanently accomplished with a dermal graft. A three-eighths inch incision is made along the upper mesial line of the eyebrow and the skin over the defect undermined. The required bit of skin may be removed from the abdomen, prepared in the usual manner and introduced through this small incision. A pressure bandage is applied for several days.

ROSACEA-LIKE TUBERCULID

To the Editor:—I have been troubled with a pustular eruption on the alae of the nose for the past four years. Small pustules appear on either side every five to seven days. It has been diagnosed as a seborrheic dermatitis by several dermatologists. Salicylic acid ointments, sulfur ointments, solution of sulfurated lime, lotio alba, vaccine, ultraviolet rays and ten doses of x-rays were given with little effect. The x-ray treatment was given by competent men at the University of Illinois Research Hospital about two years ago with the purpose of atrophying the seborrheic glands. Are there any suggestions which you may offer? Do you think it is worth while to have another series of x-rays to atrophy the glands? There is a pitting present with some rosacea. I would appreciate any suggestion which you might offer. Kindly omit name.

M.D., Washington.

ANSWER.—From the statement made that there are pustules, together with pitting and some rosacea, it would seem appropriate to consider the possibility of the rosacea-like tuberculid. This condition is resistant to the ordinary treatment outlined for seborrheic dermatitis, the diagnosis offered in this case. Roentgen rays given to the extent of producing atrophy of the glands would make undesirable changes in the skin and its vessels. Further suggestions about the treatment without more definite information as to the exact condition would not be of value.

LOSS OF PUBIC HAIR

To the Editor:—Will you kindly advise me as to the cause, prognosis and treatment for loss of pubic hair? The patient is a white man, aged 32, apparently healthy. Onset occurred seven years ago, with practically total loss of the pubic hair at present. There is no history of venereal disease. The Wassermann reaction is negative. The distribution of hair elsewhere is normal, with a heavy growth on the face and scalp. The patient was a very heavy cigar smoker for years. He is somewhat obese, with no definite abnormalities as to the distribution of fat. Glandular therapy both orally and parenterally has been unsuccessful; pituitary, thyroid and orchic substance has been used. X-ray examination of the sella turcica reveals a slight narrowing (if any) with no bony erosion. Please omit name and address.

M.D., New York.

ANSWER.—Without information as to the onset and course of this alopecia, the distribution of the remaining hair, and the presence or absence of scars or inflammatory areas, a diagnosis is impossible.

If scars are present, tertiary syphilis is most likely, in spite of the negative serologic reaction at present. If the skin is apparently normal in texture and color, alopecia areata is most likely. The only way to arrive at a diagnosis is an expert examination. Consultation with a dermatologist is advised.

SCARIFICATION WITH COAL DUST

To the Editor:—In this region, where there is a lot of coal mining, the traumatic abrasions and lacerations caused by injuries with coal result in quite prominent blue scarification. These scars, when occurring on the exposed parts of the body, result in quite serious complications from a cosmetic and compensation standpoint. What is the most effective means of treating such injuries with a view to preventing these pigmented scars? What is the best treatment of these scars after they have formed? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—Abrasions and lacerations caused by coal or other types of carbon should be curetted thoroughly before sutures are inserted or the wound allowed to heal. The disfiguring areas of carbon deposit not removed at the time of the injury are most satisfactorily removed by plastic surgery. A few of them may be removed by tattooing first with 50 per cent tannic acid solution and then with silver nitrate. It requires some time for the resulting eschar to separate, leaving in successful cases a white superficial scar.

OPACITY OF CORNEA IN DOGS

To the Editor:—Patients brought to me their pet dog, after having visited a number of veterinarians without success, because of a haziness of the cornea of both eyes. This haziness would come and go without incident, but it now has become apparently permanent. The right eye is least affected, but the left is completely grayish white and the poor animal cannot get about. I advised them to put him on a milk and vegetable diet with beef bones and cod liver oil capsules, but no improvement has resulted. Several other dogs of the same litter have been similarly afflicted and that raises the question of heredity, about which my knowledge is very meager so far as dogs are concerned. Can you give me any information on this subject? Please omit name.

M.D., Pennsylvania.

ANSWER.—Corneal opacities in dogs are usually due to the traumatism of running through bushes, by which the cornea receives repeated scratches and develops a rather dense scar formation. In the case of the correspondent's dog, apparently a different type of opacity is present. Similar conditions have been observed in laboratory animals both as a congenital defect and as the result of the use of various kinds of drugs, especially large doses of the salicylates and cinchophen. The only treatment that would offer any prospects of success is a liberal diet including plenty of vitamin A, which has already apparently been done, and the avoidance of any drug that might possibly be causing the opacity.

BED REST IN HEART DISEASE

To the Editor:—In my practice I find patients beyond 60 years of age incapacitated by chronic myocardial disease. Their functional capacity, according to the heart committee of the New York Tuberculosis and Health Association, has been thus classified: 1. Patients with organic heart disease, able to carry on ordinary physical activity without discomfort. 2. Patients with organic heart disease, unable to carry on ordinary physical activity without discomfort. (*a*) Activity slightly limited. (*b*) Activity greatly limited. 3. Patients with organic heart disease and with symptoms or signs of heart disease when at rest, unable to carry on any physical activity without discomfort. Following this classification, could you inform me in a general way how long these patients should remain in bed? Should they be allowed to get out of bed as soon as possible or should they be kept in bed for a long time? (Please specify number of weeks or months.) Does too much bed rest cause more degeneration of the heart muscle after a certain amount of rest? Please omit name.

M.D., Missouri.

ANSWER.—There is no possible way in which one might formulate even a general rule for such cases, even those in group 3. It is entirely a matter of judgment in each case. Rest in bed may be harmful in some cases, and supervised or directed exertion may be beneficial.

INVOLUTIONAL DEPRESSION AT MENOPAUSE

To the Editor:—I would appreciate some diagnostic suggestions with regard to the following case: A woman, aged 42, is sleepy and tired in spite of adequate sleep. She came to me first in June 1934, complaining of irregularity in menstrual periods, irritability, tiredness, insomnia and loss of weight (10 pounds, or 4.5 Kg., in six months). An x-ray examination of the lung was negative at this time. The heart was normal. The blood pressure was 128 systolic, 80 diastolic. There was some pain and tenderness in the region of the appendix. The blood count was normal. No past serious illness had occurred. For the past two months she has been very sleepy at all times. This condition has not changed No other symptoms exist and the physical examination remains negative.

M.D., New York.

ANSWER.—The symptoms described seem to fit into the category of an involutional depression with the corresponding loss of weight that so frequently accompanies this condition. Women at the menopause frequently undergo depressions with insomnia, loss of appetite, loss of weight, and irritability. Lately success has been reported by the use of theelin injections, which substitute for the deficient ovarian secretion. The details are given in articles by Werner and his colleagues.

TRAUMA AND TUBERCULOSIS OF TESTIS

To the Editor:—A man, aged 32, was employed as a wire puller and last January, while pulling a copper bar weighing 300 pounds, was hurt on the testicles. A tuberculous epididymitis and a vesiculitis developed. An old tuberculous condition of the lung became active and later developed into a progressive miliary tuberculosis. The previous history of the patient is that five years ago he had a tuberculous lesion of one lung, which was cured. Is there, in your opinion, a causal relation between the trauma and the miliary tuberculosis? Please omit name.

M.D., New York.

ANSWER.—It would be difficult to state positively that there was a causal relation between the trauma and the miliary tuberculosis. All know, only too well, that the same thing may occur in a patient who has not been exposed to trauma.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARKANSAS: *Medical (Regular).* Little Rock, May 11-12. Sec., Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, May 11. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Los Angeles, Feb. 8-11. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Feb. 13. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Homeopathic).* Derby, Feb. 13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven. *Medical (Regular).* Hartford, March 9-10. *Endorsement.* Hartford, March 23. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

FLORIDA: Jacksonville, June 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, April 6-8. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 22-24. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, 301 State House, Indianapolis.

KENTUCKY: Louisville, June 9-11. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, June 15-18. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MISSISSIPPI: Jackson, June. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NORTH CAROLINA: Raleigh, June 21. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

OKLAHOMA: Oklahoma City, June 9-10. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science.* Portland, March 20. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 17-19. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Madison, April 3. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, January 30, page 419.

Mississippi November Report

Dr. R. N. Whitfield, assistant secretary, Mississippi State Board of Health, reports 5 physicians licensed by reciprocity and 2 physicians licensed by endorsement at the meeting held in Jackson on Nov. 28, 1936. The following schools were represented:

School	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Jenner Medical College, Chicago	(1905)	Illinois
Tulane University of Louisiana School of Medicine	(1934), (1935)	Louisiana
University of Tennessee College of Medicine	(1931), (1934)	Tennessee

School	Year Grad.	Endorsement of
LICENSED BY ENDORSEMENT		
University of Colorado School of Medicine	(1934)	N.B.M.Ex.
Washington University School of Medicine	(1928)	N.B.M.Ex.

Iowa December Examination

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports the written examination held in Des Moines, Dec. 1-3, 1936. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required

to pass. Seven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1936)	82.9*
University of Minnesota Medical School		(1936)	86.8
St. Louis University School of Medicine		(1936)	86.3*
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1935)	88†
Philipps-Universität Medizinische Fakultät, Marburg		(1934)	81.5*
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1922)	80.6†
Universität Basel Medizinische Fakultät		(1935)	84.8†

* License has not been issued.
† Verification of graduation in process. License has not been issued.

Book Notices

Dental Pharmacology and Therapeutics. By J. H. Blayney, B.S., D.D.S., M.S., Professor of Dental Pathology and Therapeutics, University of Illinois College of Dentistry. Second edition. Cloth. Price, $4. Pp. 340, with 25 illustrations. St. Louis: C. V. Mosby Company, 1936.

This edition has been required principally by the publication of the United States Pharmacopeia XI. The text is divided into three parts and considerable orderliness and system prevail throughout. Part I covers such general considerations as the principle of action of drugs, methods of administration, prescription writing, tables of solubilities, and average doses. The author recommends the use of English exclusively in prescription writing, his only deviation from this being the employment of some common Latin abbreviations. The book, therefore, contains no section on medical Latin. Following each main division in part I the author presents a number of problems which add much to the value of this work to the student. Part II is devoted to the consideration of drugs. These are arranged according to their chief dental uses, but the usual pharmacologic grouping has been largely maintained. The study of each important group is introduced by a discussion of such topics as mode of action and standardization of efficiency. These preliminary statements are in many instances rather extensive and interestingly presented and give valuable information. Of special value in this section are many excellent illustrations. The author does not attempt to present the extensive discussion of pharmacology which is necessary for the physician and in considering those drugs which are little used. For example, in the discussion of diuretics, dextrose and the mercurials are not even mentioned. It might be suggested that he has been a little dogmatic at times in apparently presenting, as established facts, theories that are still controversial. More moderation might also have been shown in the handling of other phases of his subject. For example, in outlining the danger of the barbiturates he states that when any of these are used daily "we may expect to find skin eruptions, injury to the kidneys, ataxia or aphasia." Practical experience in the long continued use of phenobarbital in such conditions as epilepsy does not justify this statement. Part III contains a well selected series of laboratory exercises which should be of much interest and value to the dental student. The printing is good and it is a relief to find the large type and liberal spacing which lend themselves to easy reading. Considered as a whole, this is an excellent presentation of the subject for the purpose for which the volume is intended. It naturally contains much that would be of interest to the practitioner in medicine and, as it is comparatively small, it would serve as a useful review to those physicians who have not the time or inclination to undertake a more extensive treatise.

Being Born. By Frances Bruce Strain. Cloth. Price, $1.50. Pp. 144, with illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1936.

This is a book to arouse enthusiasm. It tells everything that a young person could wish to know about sex. It uses correct scientific terminology. It is devoid of emotionalism and sentimentality. It is clear and concise. The "road maps" showing the routes by which the ovum and the sperm make the necessary contact are diagrammatic, clear and easily followed. The photographs showing the similarity of various species in the early fetal stage and the serial photographs of the human fetus in various developmental stages are excellent, as are the window silhouettes showing the gravid uterus in its relationship to the mother's body. The use of animals to illustrate certain points is interesting because the author reverses the usual order. Instead of describing the procreation processes of amebas, fish, frogs, turtles, birds, mammals and finally man, she starts right in and talks about her principal topic, using the animals as illustrative and comparative sidelights. The method is effective. Especially valuable is the chapter on heredity, out of which comes so easily the next step, the lesson of continence and monogamy. There is no preaching in this book, and therein lies its power. While it is unemotional and scientific, it is not cold, but friendly and personal. Lovely photographs of statues showing the beautiful nude body of a young boy and of a young girl have been chosen with extraordinarily good taste to express the beauty and grace of the body with a fine candor which subtly enhances the spirit of the text. The introduction, written for parents, is separate; parents are advised to remove this and the jacket and to give the book as a gift of which the owner may be proud. Throughout, the work shows profound thought, meticulous care, and a sympathetic understanding of youth as well as of the psychology of the learning process. Altogether, it is an admirable work.

The Influence of Diet on Caries in Children's Teeth (Final Report). By The Committee for the Investigation of Dental Disease (Assisted by Alan Deverall and Mabel Reynolds). Medical Research Council, Special Report Series, No. 211. Paper. Price, 2s. Pp. 137, with 8 illustrations. London: His Majesty's Stationery Office, 1936.

The report summarizes the conclusions of the Committee on Dental Disease, appointed by the British Medical Research Council to test the validity of the theory, based on Mellanby's earlier work, that the nutritional condition of the body is a dominant factor in determining the structure of teeth and their resistance to decay. Specifically, the study was confined to the effect on the incidence of dental decay of the administration of vitamin D, in the form of either cod liver oil or viosterol. The children studied were inmates of three orphanages in the vicinity of Birmingham. About 250 children were included in the survey; one study continued over a period of three years, another for two and one-half years. In addition to detailed dental records, data were obtained as to the level of general health and bony deformities such as are produced by rickets. The dental examination included the study of the surface structure of the teeth, caries, alinement and occlusion, and condition of the gums. Activity of caries was gaged from the "texture" of the exposed dentin; if soft enough to permit entry of the exploring tine in any degree, activity was designated. As supplements to the "basic diet," the following were offered daily to each child, a different supplement being used in each of the three orphanages: (1) from 1 to 1½ ounces of syrup; (2) from 1 to 1½ tablespoonfuls of olive oil; (3) from 1 to 1½ tablespoonfuls of cod liver oil. The exact amount of each was proportional to the age of the child. In the second survey, half of the group receiving olive oil received oil containing viosterol. The cod liver oil had a vitamin D equivalence of from 15 to 150 international units per cubic centimeter, the usual variations being from 50 to 100; the viosterol solution, given in volume equivalent to that of cod liver oil, contained about 625 units per cubic centimeter. A subsidiary third study on the effect of added vitamin D on the structure of the teeth of young children failed in its objective because of difficulties in administration. The data are analyzed in great detail, due regard being given to possible secondary factors in the studies. In summary, the following statement expresses the committee's interpretation of the results observed: "The investigations described in this report show conclusively that a relatively high vitamin D content of the food can do much to diminish the incidence of caries if the vitamin is given during the development of the teeth; that a beneficial effect may be obtained if the vitamin is given at a fairly late stage of development; and that even when it is given after the eruption of the teeth, the onset and spread of caries is delayed."

It is interesting to analyze the nature of the basic diets used in the three orphanages, since the authors state that "the diets . . . are satisfactory according to accepted standards and are certainly better than the diets obtainable by the majority of the children . . . of the community." The data are offered in terms of allowance per "man" daily, with no reference to

whether the increased needs of the rapidly growing child were recognized. The diets obviously were low in milk (less than a pint a day per child), succulent vegetables, fruits and protein; only half of the protein was of animal origin. In view of the American investigations, which are quoted, it seems probable that their incidence of dental improvement might have been still more noteworthy if the basic diets had been more in accordance with the requirements for good nutrition as recognized in this country. Several facts point to the conclusion that the vitamin D served to aid in completing a deficient dietary; in addition to its beneficial effect on the teeth, its use was associated with lessened incidence and severity of colds, similar effects on chilblains (which constitute a source of considerable discomfort in the institutions where the studies were made), and in the general appearance of vitality of the children receiving the vitamin as a supplement.

The experiments seem adequately controlled, the results convincing. While students of nutrition have already accepted the premise the committee has established, the authors point out that the British dental profession has failed to admit its validity.

Chemical Procedures for Clinical Laboratories. By Marjorie R. Mattice, A.B., Sc.M., Assistant Professor of Clinical Pathology, New York Post Graduate Medical School of Columbia University. Cloth. Price, $6.50. Pp. 520, with 92 illustrations. Philadelphia: Lea & Febiger, 1936.

Written almost entirely from the point of view of the more advanced laboratory technician, this book nevertheless incorporates sufficient clinical data to make it interesting to practitioners. It systematically outlines sections on chemical analysis of blood, urine and gastro-intestinal, cerebrospinal and other biologic fluids. Its thoroughness is exemplified by such short but factually rich chapters as those on amniotic hydrocele and seminal fluids. A large appendix contains valuable information on the preparation of many standard solutions—a necessary adjunct to successful laboratory work. Highly interesting to the clinician should be the many tables, graphs and illustrations. The bibliography, though brief, is comprehensive and satisfactory. The clarity of the text is best appreciated in the descriptions of laboratory procedures, which are accompanied by simple drawings. The clinical discussions are appreciably amplified by diagrams which rarely tend to be dogmatic. Occasional clinical shortcomings, as, for example, failure to mention the relationship of the lecithin cholesterol ratio to water balance (as in epilepsy) are easily forgiven because of the excellence in detailing methods of analysis and the pitfalls therein for the unwary. The work is excellent for technicians with a more thorough background, clinicians and clinical laboratories.

Röntgenatlas der Erkrankungen des Herzens und der Gefässe: Ein Leitfaden für Ärzte. Von Dr. W. Brednow, Oberarzt der medizinischen Universitäts-Klinik Göttingen. Paper. Price, 10.50 marks. Pp. 155, with 87 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1936.

This is a nicely gotten up atlas of cardiac and vascular diseases, published in atlas form with excellent reproductions of roentgenograms and some nice photographs of modeled specimens of heart lesions. The illustrations include some roentgen kymograms. The normal and the diseased heart are fully illustrated, including insufficiency of the heart muscle and the various valvular and congenital lesions, with a chapter on aortic and peripheral blood vessel disease. It is a valuable publication for radiologists and others interested in heart lesions.

Atlas der Blutkrankheiten. Von Dr. Karl Schleip, Chefarzt des Deutschen Krankenhauses in Konstantinopel, und Dr. Albert Alder, Chefarzt der medizinischen Abteilung des Kantonspitals Aarau. Third edition. Half-leather. Price, 50 marks. Pp. 190, with 119 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1936.

This is truly an atlas. The pictures, though highly idealized, are yet sufficiently realistic. The text is badly neglected, and well so, for the reader is certain to neglect it also. It is the illustrations which catch the eye and hold its gaze. They are simple, beautifully colored and attractively arranged but often overcrowded. The authors lay no claim to thoroughness. They state early and clearly that this is an elementary introduction to hematology and refer the reader to other works for descriptive literature. The monophylitic-diphylitic controversy is carefully evaded by merely mentioning the two points of view and apparently siding with neither. The sole purpose is to portray to a beginning student what he could see through his microscope when focused on the usual blood or marrow smear. There is a short beginning section devoted to simple collecting, staining and technics. This is followed by illustrations of normal and abnormal blood. The classification of disease is based on pathology rather than on etiology and is therefore somewhat confusing. For those who choose to read the text, the simple language offers no obstacles. Students and general practitioners will find this atlas useful.

One Hour of Medical History. Volume V. By Benjamin Spector, M.D. Boards. Price, $2. Pp. 155, with illustrations. Boston: Tufts College Medical School, 1936.

This is the fifth of a series of booklets describing the medical-historical pageants that have become a feature of Tufts College Medical School, where the author has by this means stimulated a real interest in medical history. The present book is largely devoted to the colonial period in American medicine.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Health Insurance: Insanity Attributed to Influenza.—The defendant insurance company agreed to pay the insured certain specified benefits in event he became disabled from disease. No benefits were payable for disability resulting from insanity. The insured had attacks of influenza in January, April and July 1929, and the insurance company paid him benefits on these occasions. On July 19, 1929, the insured was found praying on the streets and was taken into custody by the police. The following day an insanity inquisition was had, as the result of which the insured was declared insane and committed to an institution. For the disability attributed to the insanity, the company refused to pay benefits. The plaintiff, as guardian for the insured, sued to recover the benefits, contending that the policy covered disability attributed to insanity in case the insanity resulted from a disease covered by the policy. The trial court dismissed the action and the plaintiff appealed to the Supreme Court of Utah.

In excluding from the policy any loss of time or disability resulting from insanity, said the Supreme Court, the policy did not in any manner limit the word "insanity" to any particular type or kind arising from any particular cause. It did not indicate that insanity caused by or resulting from a disease contracted during the policy period was within the policy, but that insanity from congenital, accidental or other causes was outside its operation. The language of the policy taken in its ordinary meaning permits no recovery, in the opinion of the court, for loss or disability because of insanity, whatever the cause of the insanity may have been. The contract of insurance therefore precludes the plaintiff from recovering for disability or loss of time due to the insanity of the insured. The judgment of the trial court was consequently affirmed.—*Moss v. Mutual Ben. Health & Accident Assn. (Utah), 56 P. (2d) 1351.*

Compensation of Physicians: Oral Promise by Daughter to Pay for Services Rendered Father.—The plaintiff, a physician, answered an emergency call from an unknown source to attend a man severely injured in an automobile accident. When he arrived at the scene of the accident, a daughter of the injured man requested him, according to the evidence, to "do everything you can under the sun to see this man is taken care of . . . and what the charges are . . . I will pay for it." The plaintiff did treat the injured man until the following morning, when his services were discontinued at the request of the daughter. The injured man died several days later from the effects of the injury. The plaintiff attempted first to collect his fees from the estate of the deceased. Being unsuccessful, he, about a year after the accident, began sending bills to the deceased's widow. Finally, about a year and a half after the accident, the plaintiff instituted the present suit against the defendant, the daughter of the deceased. The trial court directed a verdict for the defendant and the plaintiff sought a reversal in the Supreme Court of Vermont.

The defendant's relations with her father, said the Supreme Court, were such that she was not liable for the plaintiff's services unless she became so by reason of what she said or did. The rule is well established that a person who merely calls a physician to render services to another is not liable therefor in the absence of an express agreement, unless the person is legally bound to furnish such services. The defendant in this case did, according to the evidence, promise to pay for the services and ordinarily, said the court, this promise might make an entirely different case for the plaintiff. It showed not only that the defendant requested the services but also that she made a direct promise to pay for them. Such a promise is not collateral or secondary, but primary and original. It is not a promise to pay the debt of another but is a promise to pay the debt of the promisor and does not have to be in writing to be valid. But, said the court, when the defendant made the promise, the plaintiff was at liberty to accept or reject it. He could, if he chose, treat the injured man on his own credit. He could not, however, hold both the injured man and the defendant liable for his fees. If he gave credit to the injured man, he could not collect from the defendant, even though she had tendered an engagement direct in form. The defendant's sole obligation could not be treated by the plaintiff as a joint obligation without her concurrence. If the plaintiff gave any credit to the injured man, he elected to accept the defendant's engagement as collateral to that of the injured man. The plaintiff did, the court pointed out, make his original charges against the injured man and it must be assumed that he did so because he considered the injured man responsible for his fees. Having given credit to the injured man, the plaintiff may not, the court concluded, collect from the defendant. The judgment of the trial court was therefore affirmed.—*Lawrence v. Anderson (Vt.), 184 A. 689.*

Compensation of Physicians: Liability for Fees of Expert Witness.—The plaintiff, a physician, sued to recover for the value of services rendered in giving expert testimony at the trial of an action brought by the defendant for personal injuries. The trial court held that the evidence did not support the plaintiff's claim and withdrew the case from the jury. The supreme court of New Jersey, on appeal, held that an attorney has implied authority to obligate his client to pay the fee of an expert witness called by him, and reversed the judgment of the trial court withdrawing the case from the jury. (*Klein* v. *Boylan*, 115 N. J. Law, 295, 179 A. 638; abstr. THE JOURNAL, Feb. 29, 1936, p. 735.)

The case was tried a second time, again resulting in a judgment for the defendant. The plaintiff appealed to the supreme court of New Jersey, apparently contending that the trial court erred in charging the jury that, if the plaintiff was employed by the defendant's attorney acting in his own behalf and for his own benefit, the verdict should be for the defendant. There was no evidence, said the supreme court, justifying the trial court in thus charging the jury. The evidence was clear that the plaintiff looked to the defendant for payment, and there was no intimation that the attorney obligated himself personally with respect to the fees of the expert witness. It was therefore prejudicial error to submit this issue to the jury. The judgment of the trial court was consequently reversed.—*Klein v. Boylan (N. J.), 184 A. 736.*

Autopsies: Liability for Unauthorized Autopsy.—The wrongful dissection of a dead body, said the Supreme Court of Oklahoma, is regarded as a wilful and intentional wrong against the person entitled to the possession and control of the body for burial, and a recovery may be had for the mental anguish resulting from such a mutilation. The decided cases generally treat the unauthorized dissection as an interference with a legal right. This legal right is the right to have immediate possession of the body in its condition at the time of death, and control for burial. A petition, therefore, which alleges the right to a body, a refusal to deliver up the body on demand, and the performance of an unauthorized and wrongful autopsy thereon while it is withheld, states a cause of action for damages for the interference with legal rights, and mental anguish is a proper element of such damages.—*McPoory v. Sisters of the Sorrowful Mother et al. (Okla.), 57 P. (2d) 617.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Toronto, Ont., March 25-27. Dr. George W. Corner, 260 Crittenden Blvd., Rochester, N. Y., Secretary.
American Association of Pathologists and Bacteriologists, Chicago, March 25-26. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.
American Orthopsychiatric Association, New York, Feb. 18-20. Dr. George S. Stevenson, 50 West 50th St., New York, Secretary.
Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 15-16. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.
Arizona State Medical Association, Yuma, April 1-3. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.
Mid-South Post-Graduate Assembly, Memphis, Tenn., Feb. 16-19. Dr. A. F. Cooper, Goodwyn Institute Building, Memphis, Tenn., Secretary.
Pacific Coast Surgical Association, Seattle, Wash., and Victoria, B. C., Feb. 24-27. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.
Southeastern Surgical Congress, Louisville, Ky., March 8-10. Dr. Benjamin T. Beasley, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Ninth Annual Meeting, Held in Chicago, Nov. 6 and 7, 1936

The President, DR. FRED M. SMITH, Iowa City, in the Chair

Duodenal Ulcer: Roentgenologic Demonstration of the Crater

DRS. FREDERIC E. TEMPLETON and THEODORE E. HEINZ, Chicago: This report has to do with about 350 cases of duodenal ulcer studied with especial reference to the roentgenologic demonstration of the crater and its clinical importance. In three fourths of the cases with clinical evidence of activity a definite crater was seen. In no instance was a crater found in a patient who gave an old ulcer story and who had no clinical evidence of activity at the time of the roentgenologic examination. The difficulty involved in the differentiation of true craters and "pseudocraters" is discussed. The clinical value of the roentgenologic demonstration of the crater as regards diagnosis, prognosis and therapy is emphasized.

Influence of Certain Drugs in Relation to Biliary Pain—Variations in Intrabiliary Pressure

DRS. WALTMAN WALTERS, JOHN M. MCGOWAN and WINFIELD L. BUTSCH, Rochester, Minn.: Changes in pressure in the common bile duct have been studied in a group of cases in which operation had been performed for lesions of the biliary tract and in which, as a part of the operation, the common bile duct had been opened and explored, and the incision in it closed around a T tube. By studying changes in pressure in the common bile duct and correlating the various phases of pressure with roentgenograms, we have been able to demonstrate that attacks of biliary colic are associated with increase of pressure in the common bile duct from 0 or 20 mm. of water up to 200 and even 300 mm. of water; the increase results from spasm of the sphincter of Oddi preventing the bile entering freely into the duodenum. When a substance opaque to x-rays is employed, fluoroscopic and roentgenographic examinations reveal the spasm of the lower portion of the common bile duct or the sphincter of Oddi, with abnormal filling and distention of the intrahepatic ducts, during the height of the pain. Inhalation of amyl nitrite or sublingual administration of 1/100 grain (0.00065 Gm.) of glyceryl trinitrate reduces intrabiliary pressure and relieves biliary colic, and roentgenograms give evidence of release of the spasm of the lower end of the duct and of the sphincter of Oddi. Patients who experience pain following administration of morphine belong to the group of those who suffer from the so-called postcholecystectomy syndrome.

In more than twenty cases studied twelve days after removal of the gallbladder and exploration and drainage by T tube of the common duct, morphine one-sixth grain (0.01 Gm.) given subcutaneously has produced increase in pressure in the common bile duct, from 0 or 20 mm. of water up to 200 and even 300 mm. of water. Pressure begins from two to five minutes after injection of morphine and rises at a variable speed. In some cases rises in pressure are accompanied by typical attacks of biliary colic and frequently by nausea. Severe pain is com-

plained of when the pressure reaches 100 mm. of water. Amyl nitrite and glyceryl trinitrate relieve the intraductal pressure produced by morphine.

Dilaudid, pantopon (a mixture of opium and alkaloids) and codeine produce effects similar to morphine. Glyceryl trinitrate 1/100 grain (0.00065 Gm.), the variety for hypodermic use, placed under the tongue, after a period of three minutes reduces intrabiliary pressure and relieves biliary colic. If the pain has been brought on by morphine, the glyceryl trinitrate relieves it for one hour. Theophylline with ethylene diamine, when given intravenously, relaxes spasm of the sphincter of Oddi.

Drugs believed to increase the activity of smooth muscle of the gastro-intestinal tract, such as acetylcholine, physostigmine and ergotamine tartrate, did not produce demonstrable spasm or relaxation of the sphincter of Oddi. The drugs commonly believed to have a relaxing effect on smooth muscle, such as atropine, scopolamine, papaverine hydrochloride and calcium chloride, as well as drugs known to have a relaxing action on blood vessels, such as alcohol, histamine and muscle adenosine phosphate, did not produce evidence of relaxation of the sphincter of Oddi nor did they produce spasm.

DISCUSSION

DR. K. K. CHEN, Indianapolis: May I ask the authors whether they tried papaverine?

DR. L. N. KATZ, Chicago: Did the authors note any correlation between the threshold of the pain response to pressure and the clinical composition of the bile present in the gallbladder? Did they note whether there was any correlation between the threshold of the pain on pressure and the presence of inflammatory processes in the gallbladder? Such variability might be expected since one is dealing here with sense organs that are responsive to threshold stimuli. The threshold might therefore be modified by clinical agents or inflammatory processes.

DR. P. K. KNOEFEL, Louisville, Ky.: Can pantopon produce the same effect as morphine?

DR. G. O. BROUN, St. Louis: What about dilaudid?

DR. CLYDE LEEPER, Cleveland: Is there any relation between pain of such origin and cardiac pain since both are relieved by glyceryl trinitrate? I should like to ask about the distribution of this pain and whether it simulates cardiac pain.

DR. ARTHUR MIRSKY, Chicago: I should like to ask whether a spasm of the sphincter is observed sufficiently long to produce an obstruction of bile and jaundice.

DR. WALTMAN WALTERS, Rochester, Minn.: Replying to the question relative to the effect of papaverine, pantopon and dilaudid on the sphincter of Oddi: In the cases which we have studied papaverine has had no effect on the relaxation of the sphincter of Oddi, while dilaudid, pantopon and codeine produced effects similar to those of morphine. Replying to the question as to differentiation between the attacks of pain attributable to coronary disease and those attributable to spasm of the sphincter of Oddi, it can be stated that in the cases in which we carried out these studies of intraductal pressure we have demonstrated not alone by studies of pressure but also by roentgenologic visualization of the common bile duct that pain occurs when there is a spasm of the sphincter which increases the pressure within the common bile duct and fills many of the finer radicles of the intrahepatic ducts. This was demonstrated in one of the illustrations which we presented. With the administration of amyl nitrite and glyceryl trinitrate, spasm of the sphincter decreases and fluid can be seen to leave the common duct and enter the duodenum with the resulting decrease in intraductal pressure. This, I think, is definite evidence that the pain in these cases has been the result of spasm of the sphincter of Oddi or of the lower end of the duct and not the result of cardiac disease. I do not know of any case in which spasmodic obstruction of the sphincter unassociated with other lesions of the duct or pancreas has produced jaundice.

Recovery from Extensive Cirrhosis of Liver

DRS. JESSE L. BOLLMAN and ALBERT M. SNELL, Rochester, Minn.: Cirrhosis of the liver was produced in experimental animals by carbon tetrachloride. When ascites of sufficient degree to require frequent paracentesis was present, biopsy disclosed extreme degrees of cirrhosis. Daily intravenous injections of dextrose and repeated paracentesis over periods of several weeks were followed by diminution of the volume of ascitic fluid and improvement in the condition of the animals. Functional tests and biopsy of the liver indicate restoration of that origin to a practically normal state. Histories of patients who have portal cirrhosis and who give evidence of marked clinical improvement following similar treatment are presented. The clinical and experimental results indicate that the long continued intravenous administration of dextrose may bring about regeneration of the liver in some instances even after ascites and definite hepatic insufficiency have developed.

DISCUSSION

DR. SAMUEL SOSKIN, Chicago: My own results concerning the value of dextrose in such conditions agree most thoroughly with the results reported by the authors. I should like to ask what type of diet their animals were fed during the period in which they were being intoxicated and their livers were deteriorating.

DR. ROBERT W. KEETON, Chicago: What was the daily dose of dextrose in this patient?

DR. WALTER L. PALMER, Chicago: I should like to ask whether or not the authors think it is necessary to give intravenous dextrose provided the patient is able to take dextrose by mouth. I am aware that many of these patients are not able to take dextrose by mouth for a number of days. It may be worth while to recall the story told by Dr. Joseph L. Miller of a patient who came to the Cook County Hospital twenty years ago with slight jaundice and ascites. One night the patient had a vision in which an angel came and advised him to eat a pound of sugar a day. He ate a pound a day and he got well. Twenty years later the ascites recurred.

DR. GEORGE E. WAKERLIN, Louisville, Ky.: Were blood studies made on these dogs? Is there any advantage in giving carbon tetrachloride by inhalation rather than by mouth?

DR. LOUIS LEITER, Chicago: Would the administration of dextrose be considered a specific measure for the regeneration of liver cells or for the purpose of furnishing calories to animals or persons not able to eat?

DR. JESSE L. BOLLMAN, Rochester, Minn.: With reference to Dr. Wakerlin's question concerning the diet of our animals and about the method of carbon tetrachloride administration, the following may be said: In these experiments the animals were maintained on a diet completely adequate for their basal requirement with an addition of carbohydrate to cover their energy needs. In other experiments we have succeeded in producing cirrhosis on diets rich in fat or diets rich in protein. However, under such circumstances the administration of carbon tetrachloride frequently produces extensive acute necrosis of the liver with fatal termination. Cirrhosis develops as a result of frequent breakdown and repair. The damage to the liver must be sufficient to stimulate cellular regeneration and at the same time remain sublethal, so that the process may be repeated many times. The advantage of administering carbon tetrachloride by inhalation is that by producing anesthesia for a definite period of time we have standardized one physiologic effect of the drug and the effects on the liver seem to be more comparable. When the drug is given by mouth, the extent of the lesions of the liver vary greatly. I think that the variations are due to differences in the rate of absorption which we have been unable to overcome. Blood studies of cirrhotic animals at the stage of ascites formation show that there is a decrease in the serum albumin and usually some increase in the serum globulin. A macrocytic type of anemia is frequently, although not always, found to be present at this time.

DR. ALBERT M. SNELL, Rochester, Minn.: In answer to Dr. Keeton's question, we gave from 100 to 200 Gm. of dextrose daily. Dr. Palmer and Dr. Leiter raise the question whether the same effects could not be obtained by dietary means alone. This is doubtful, since a patient in this condition could hardly take a sufficiently high carbohydrate diet to accomplish much; this is as true of the dog with experimental cirrhosis as it is of patients with comparable conditions. Perhaps the maintenance of a sufficient intake of calories and fluid is all that is necessary, although on the whole it seems that dextrose given intravenously does have some specific value.

The Function of the Small Intestine

DRS. LORIN D. WHITTAKER and J. ARNOLD BARGEN, Rochester, Minn.: This report is a part of an investigation of the function of the small intestine of human beings who have had stomas made in the terminal portion of the ileum, with or without an associated colectomy. Patients were studied as late as five and a half years after ileostomy. Repeated quantitative determinations of chemical constituents of the blood were carried out. There was consistently seen a moderate decrease in the values only for calcium in the serum following ileostomy. The values returned to normal at the end of one month and remained normal. The effect of ileostomy on the caliber of the terminal portion of the ileum was studied roentgenologically, at reoperation and at necropsy. A definite dilatation of the terminal portion of the ileum was found. There was no evidence, however, that the amount of dilatation present was sufficient to compensate volumetrically for the excluded colonic reservoir. The motor activity was studied by means of intestinal tracings to determine what part intestinal motility might play in the reduction in activity of the ileac stoma and in the thickening of the discharge that occurs following ileostomy. There was no fundamental change from normal in motor activity through the prolonged postoperative period of observation. The changes in activity of the ileac stoma and in consistency of the discharge cannot be ascribed to changes in motor activity.

Alterations in the Respiratory Tract from Aspirated Vomitus

DRS. CARL W. APFELBACH and OSCAR O. CHRISTIANSON, Chicago: In moribund individuals, in the presence of dilatation of the gastro-intestinal tract and under the influence of general anesthesia, flooding of the respiratory tract with vomitus leads to acute alterations that have not been described and recognized anatomically and clinically to a degree proportionate to the frequency of occurrence. Hemolysis, hemorrhage, edema, acute emphysema and necrosis are the characteristic changes. Abscess and gangrene from aspirated foreign material are excluded from the discussion. Clinically acute dilatation of the heart, pulmonary embolism, coronary thrombosis and acute pulmonary edema are the usual interpretations. The characteristic alterations have been reproduced in dogs by injecting material from dilated stomachs into the trachea. The frequency of this complication has been reduced at the Presbyterian Hospital by an increase in aspiration of the stomach when dilatation is diagnosed. Even though it usually occurs in moribund conditions, it occasionally is the major complication causing death.

DISCUSSION

DR. M. W. BINGER, Rochester, Minn.: In 1926 and 1927 Dr. Wilder and I made a study of postoperative pneumonia in a series of 300 cases. We thought these were practically all aspiration pneumonias. Cultures were made from the sputum and practically all were hemolytic streptococci. There were some cases in which food was present in the trachea, probably because of regurgitation from the stomach and aspiration in the lung. I think this is important in surgical complications.

DR. CARL W. APFELBACH, Chicago: This condition may occur during labor, but during the last eight years we did not observe aspiration of vomitus in labor. I should have mentioned that Dr. Balfour emphasized the importance of pulmonary aspiration of vomitus as a complication of gastro-enterostomy and other operations on the stomach. It is a well recognized condition pathologically but has appeared in textbooks on pathology only occasionally, and the clinical textbooks do not give it importance that is proportional to its frequency.

Comparative Effects of Protamine, Crystalline and Regular Insulin on Blood Sugar

DRS. GORDON B. MYERS and FRANK S. PERKIN, Detroit: The comparative effects of uniform doses of protamine insulin, crystalline insulin and regular insulin at 7:40 a. m. and 6 p. m. on the blood sugar before breakfast and three hours after each meal were studied in a group of ten diabetic patients. From the parallelism in the curves on regular and crystalline insulin, it would appear that there is little if any difference in their action when used in the manner prescribed. The duration of the hypoglycemic effect of protamine insulin was considerably greater than that of crystalline or regular insulin.

The comparative effects of single doses of protamine zinc, protamine calcium and plain protamine insulin at 7 a. m. daily were studied in ten patients with severe diabetes. The results with protamine zinc insulin were much superior to those with any of the other preparations. The average fasting level of 0.069 per cent would indicate that its hypoglycemic effect exceeds twenty-four hours. The group was better controlled on a single dose of protamine zinc insulin averaging 44 units than on an average of 3.3 doses of regular insulin daily totaling 60 units. Severe reactions have occurred between midnight and 5 a. m., from seventeen to twenty-two hours after the administration of protamine zinc insulin. They can usually be prevented by a small bedtime feeding.

Protamine zinc insulin was used successfully as a supplement to regular insulin in the treatment of diabetic coma. One patient who had required twenty doses of regular insulin totaling 300 units in her first attack of diabetic coma was brought out of a second attack of similar depth by a single dose of 100 units of protamine zinc insulin supplemented by two doses of regular insulin amounting to 70 units.

Insulin with Prolonged Action

DRS. RANDALL G. SPRAGUE and EDWARD H. RYNEARSON, Rochester, Minn.: Comparative studies of the duration of the hypoglycemic effect of various preparations of insulin were made on young patients having severe diabetes of long standing. The observations show that the precipitation of insulin with protamines, as performed by Hagedorn, results in marked slowing and prolongation of its action. The addition of soluble zinc salts in small amounts to protamine insulin apparently causes a further slowing of its action, while calcium has the opposite effect. Crystalline insulin containing small amounts of zinc (insulin-zinc) as prepared by Sahyun, acts for only a slightly longer period than regular insulin. The gradual production of hypoglycemia by slowly acting insulin is attended by milder early symptoms than are observed in the hypoglycemia produced by regular insulin, although the late symptoms may be equally severe. The clinical management of severe diabetes is improved and simplified by the use of protamine insulin supplemented by small doses of regular insulin.

DISCUSSION ON INSULIN

DR. HENRY T. RICKETTS, Chicago: It is interesting in connection with the discussion of zinc that Rabinowitch has shown quite clearly that the addition of zinc to regular insulin in large amounts may so delay the action of insulin as to inhibit it completely for from six to nine hours; so there seems to be no question that zinc is the factor largely responsible for the delayed action of zinc protamine and insulin zinc. As to the toxicity of zinc, Rabinowitch has been able to produce no evidence of this from available data. I should like to ask Dr. Myers and Dr. Sprague if they have observed any patients on protamine insulin during acute infections. We have had three patients at Billings with mild infections of the upper respiratory tract on protamine in whom it was necessary to increase the amount of insulin. This seems to be quite out of line with former experience with regular insulin.

DR. MOSES BARRON, Minneapolis: This work with protamine insulin will probably prove to be almost as great an advance in the treatment of diabetes as the introduction of insulin in the first place was over the preinsulin treatment. The second paper showed how zinc insulin seems to have a more prolonged as well as more intense action than the plain protamine insulin. I recently had a patient in whom that was brought out. This patient had severe diabetes with an infection of the upper respiratory tract and a large abscess in the lung. The patient had to be given massive doses, from 70 to 100 units of protamine insulin daily. She also had to be given some plain insulin in the morning in order to eliminate glycosuria in the latter part of the forenoon. When given zinc insulin she seemed to be under good control. When this was changed to the plain protamine insulin she would at once develop a severe glycosuria, and later when she would be put back again on the zinc insulin she would often develop severe hypoglycemic reactions about 2 or 3 o'clock in the morning with severe convulsive seizures. Just one more point about the treatment of acidosis in diabetic coma: I believe that at no time should protamine insulin be given alone, since the action would be too slow and the patient's life would then be endangered.

DR. G. K. FENN, Chicago: I should like to ask Dr. Myers why he gives his single dose of protamine zinc insulin at 7 o'clock in the morning when the maximum hypoglycemia occurs about twenty-two hours later. If the patient is to have a hypoglycemic reaction it would seem desirable to have it while he is awake.

DR. GORDON B. MYERS, Detroit: With reference to Dr. Rickett's discussion, we have also increased the dose of protamine zinc insulin in the presence of acute infection of the upper respiratory tract. It has sometimes been necessary to give a small dose of regular insulin in the morning as a supplement. With reference to Dr. Fenn's question, our choice of a 7 a. m. injection time for protamine zinc insulin was based on a trial conducted on five patients. These five patients received a single daily dose successively at 7 a. m. and 6, 8 and 11 p. m. The blood sugar was best controlled when the injection was given at 7 a. m. It was fairly well controlled by a single dose at 11 p. m. but poorly controlled with injections at 6 or 8 p. m.

DR. RANDALL G. SPRAGUE, Rochester, Minn.: We found it true that the requirement of protamine insulin is increased in the presence of infection; however, it is impossible to say that the increase is out of proportion to that which is observed when regular insulin is used alone. Probably the best procedure in the presence of infection is to leave the dose of protamine insulin unchanged and to meet the increased requirement by additions of regular insulin. With regard to the use of protamine insulin alone in diabetic acidosis, Dr. Rabinowitch has reported good results with the zinc preparation in two cases. Probably such a practice should not yet be adopted generally because it may be very dangerous owing to the slow insulin action. We have used protamine insulin as a supplement to regular insulin in the treatment of acidosis, and we have the impression that it may facilitate control of the condition; however, for the present we feel that the chief reliance should be placed on regular insulin.

Observations on "Prediabetes"

DR. HUGO R. RONY, Chicago: Twenty cases of obesity associated with "prediabetes"—very low sugar tolerance—were observed in the clinic for from one to nine years. During this time repeated dextrose tolerance tests were made following varied dietary regimens. The purpose of this study was (*a*) to find out when and under what conditions diabetes would develop in such cases and (*b*) to observe the effect of certain dietary factors on the sugar tolerance in this syndrome.

(*a*) None of the patients developed diabetes. The dextrose tolerance increased in the majority of cases, including some in which the weight remained the same and one in which the weight increased. Persistent decrease of dextrose tolerance was not observed in any case. Accordingly, direct observation does not support the current idea that low sugar tolerance in obesity is a precursor to diabetes.

(*b*) Obese persons with low dextrose tolerance respond to low carbohydrate diet or fasting with immediate increase of dextrose tolerance; high carbohydrate diet promptly depresses the dextrose tolerance. This is the opposite of what is known to occur in normal persons. Evidence is presented suggesting that this difference between obese and normal persons is due to the capacity of the fat depots to absorb large amounts of dextrose from the blood when dextrose is ingested after a period of undernutrition.

DISCUSSION

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: I should like to ask Dr. Rony whether he will state his definition of prediabetes. According to the conventional sugar tolerance tests, these cases he has illustrated would be diagnosed as diabetes and would be classified as of the nonprogressive type. Perhaps the definition he is using will clarify the problem.

DR. HUGO R. RONY, Chicago: The most important point in the diagnosis of diabetes is, according to Joslin, the elevation of the fasting blood sugar. In a number of our cases the fasting blood sugar was below 120 mg. per hundred cubic centimeters; in no case was it above 140 mg. Furthermore, these cases showed no clinical signs or symptoms of diabetes, such as spontaneous loss of weight, polydipsia or polyuria. The term "prediabetes" has been recommended by some authors because they thought that these patients eventually develop manifest diabetes—a belief which is not supported by actual observation. The underlying metabolic disturbance in such cases is probably quite different from that which is manifested by clinical diabetes.

"Insulin Resistance" and Related Conditions

DRS. SAMUEL SOSKIN, M. DAVID ALLWEISS and I. ARTHUR MIRSKY, Chicago: While the decreased carbohydrate tolerance in toxemic conditions has often been ascribed to pancreatic injury, the relative ineffectiveness of administered insulin under the same conditions suggests some other organ or tissue as the site of the toxemic disturbance. Our recent studies, in experimentally toxemic dogs, have shown that the liver is the chief organ involved. The hepatic disturbance consists of two distinct phases: (1) impairment of the homeostatic blood sugar regulating mechanism and (2) a decreased ability to store glycogen of endogenous origin. This work offers a clinically useful conception of "insulin resistance," "insulin sensitivity" and certain cases of so-called hyperinsulinism. It also offers a rational approach to the therapy of these conditions.

DISCUSSION

DR. CECIL STRIKER, Cincinnati: I should like to ask whether any of these dogs developed diabetes in the presence of cirrhosis of the liver.

DR. ADOLPH SACHS, Omaha: I should like to ask whether Dr. Soskin has had any experience with insulin resistance in cases of hemochromatosis and, if so, does he think that the amount of liver damage bears any relationship to the insulin resistance?

DR. WALTER L. PALMER, Chicago: I should like to ask how much direct evidence of liver damage there is in these patients who are insulin resistant.

DR. W. A. THOMAS, Chicago: It is interesting to note in a study of the toxemias of pregnancy in the early stages in which there is likely to be a glycosuria that there is evidence of liver damage. In the last trimester, in which the toxemias are more severe, there will be low blood sugar and lowered liver function. So there are two stages of irritability of the liver.

DR. SAMUEL SOSKIN, Chicago: With regard to what might be called "toxic diabetes" as opposed to true diabetes, it is difficult to distinguish clinically between the two, in the present state of our knowledge. The liver is the effector organ in diabetes of whatever origin. The end results are therefore very similar. In the analogy in which I compared the homeostatic liver mechanism to a thermostat-furnace mechanism, I pointed out that anything which would prevent the thermostat from responding to a rise in room temperature would allow an overaction of the furnace and would lead to a rise in room temperature. Likewise any disturbance, whether toxic or hormonic, which prevents the liver from responding normally to a hyperglycemia may result in a similar diabetic state. There are certain things, such as the presence of other evidence of liver dysfunction, which help in the diagnosis of a "toxic diabetes." We have observed cases in which there was such evidence, as shown by jaundice and abnormal responses to liver function tests. As to the relation of hemochromatosis to insulin resistance: what one finds in any form of liver damage depends on the degree of damage present. We have previously described a characteristic cycle of events as regards the dextrose tolerance curve in a progressive toxic liver injury. In today's communication we have shown that the same cycle of events occurs as regards the response to insulin administration, once the factor of endogenous glycogen formation has been taken into account. Thus any isolated test of carbohydrate tolerance or insulin sensitivity is difficult to interpret. One must know something of the course of events. It is important to consider the duration of the condition and the presence of other evidence of liver damage. For example, we showed the records of toxemic animals, in which the dextrose tolerance curves and the response to injected insulin became quite normal. This did not mean that these animals were improving, for they were obviously getting worse and eventually died. A similar occurrence has been reported in patients with diabetes and liver cirrhosis, in whom the diabetes subsided as the cirrhosis progressed toward a fatal termination.

(To be continued)

Current Medical Literature

AMERICAN

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Alabama Medical Association Journal, Montgomery

6: 189-220 (Dec.) 1936

Surgery of the Prostate. E. Burns, New Orleans.—p. 189.
William Crawford Gorgas: His Contribution to Civilization. J. N. Baker, Montgomery.—p. 192.
Eczema from the Pediatrician's Standpoint. J. Signorelli, New Orleans.—p. 197.
New Attack on the Tuberculosis Problem. W. P. Dearing, Montgomery.—p. 201.
Effect of Pregnancy on Upper Urinary Tract. J. P. Robertson, Birmingham.—p. 204.

American J. Obstetrics and Gynecology, St. Louis

32: 911-1102 (Dec.) 1936. Partial Index

Pyelitis in Toxemias of Pregnancy. J. P. Peters, P. H. Lavietes and H. M. Zimmerman, New Haven, Conn.—p. 911.
*Blood and Plasma Volume Changes in Eclampsia. W. J. Dieckmann, Chicago.—p. 927.
Blood Lipids in Preeclampsia. E. M. Boyd, Kingston, Ont.—p. 937.
Therapeutic Abortion by Means of X-Ray. M. D. Mayer, W. Harris and S. Wimpfheimer, New York.—p. 945.
Biologic Test for Diagnosis of Intra-Uterine Fetal Death. G. H. Rezek, Chicago.—p. 976.
Critical Study of Low Cervical and Classic Cesarean Section Operations. F. H. Falls, Chicago.—p. 989.
Tumors of Ovary: Study of 1,101 Cases of Operations for Ovarian Tumor. P. Bernstein, New York.—p. 1023.
Menstrual Bleeding After Corpus Luteum Excision, Followed by Estrin or Progestin Therapy: Report of Thirteen Cases. H. Wiesbader, E. T. Engle and P. E. Smith, New York.—p. 1039.
Comparative Study of Pelvic Temperatures Under Various Therapeutic Procedures. H. C. Ingraham, New York.—p. 1048.
*Fatal Air Embolism on Eighth Day of Puerperium. J. K. Quigley and I. A. Gáspár, Rochester, N. Y.—p. 1054.
Full Term Pregnancy Complicated by an Acute Intestinal Obstruction and False Labor Pains. J. Casagrande, Brooklyn.—p. 1058.
Lithopedion. S. A. Osheroff, Omaha.—p. 1064.
Pregnancy After Removal of Both Ovaries. W. A. Scott, Toronto.—p. 1067.

Blood Volume Changes in Eclampsia.—Through the study of the constituents in the blood and urine of toxemic patients Dieckmann found that a concentration of the blood, which may be relative (below the average for the period of pregnancy) or absolute (less than the normal for the nonpregnant patient), occurs in eclampsia. This concentration can be demonstrated by blood and plasma volume determinations, but it is best demonstrated by serial determinations of hemoglobin, cell volume or serum protein concentration. The change in concentration of these substances is not always parallel, but the direction of change is usually the same. A concentration of the blood and plasma is not the cause of the eclampsia, but it is intimately associated with the convulsions, coma, oliguria and the various cerebral, visual and gastro-intestinal symptoms. A blood dilution is associated with clinical improvement as determined by a diuresis, cessation of the convulsion, return to consciousness and decrease in temperature and pulse. Death occurred in three patients in whom a permanent blood dilution could not be maintained. Since the exact cause of eclampsia is unknown and a concentration of the blood occurs which may be so marked as to be incompatible with life, treatment that will dilute the blood should be instituted. If the case is mild, almost any type of treatment is efficacious. If the case is severe, treatment that comprises control of the convulsion, dilution of the blood and relatively early delivery must be instituted.

Fatal Air Embolism on Eighth Day of Puerperium.—In their case of fatal air embolism, which occurred on the eighth day post partum, Quigley and Gáspár found that the cause of death was due to air embolism by way of opened uterine sinuses and retained small pieces of decidual tissue with hemorrhage. There evidently had been some bleeding from the placental site due to the retained small particles of decidual tissue. Blood clots were formed not only around the retained small pieces of decidual tissue but also in numerous uterine veins just beneath this area. As the patient went into the knee-chest posture, the lower pole of this blood clot became separated from the uterine wall and several large veins became opened. At first hemorrhage occurred, suddenly followed by the suction of air into these gaping veins in sufficient quantity to block the pulmonary artery and the right side of the heart.

American Journal of Orthopsychiatry, Menasha, Wis.

6: 477-662 (Oct.) 1936

Mobility and Delinquency. J. Stuart, Berkeley, Calif.—p. 486.
Comparison of Difficulty of Items for Intellectually Normal Children and Mental Defectives on Goodenough Drawing Test. Judith Israelite, New York.—p. 494.
Observations and Results of Therapeusis of Problem Children in a Dependency Institution. C. P. Oberndorf, S. Z. Orgel and Julia Goldman, New York.—p. 538.
*Gonadal Disturbances in Behavior Problems. M. Molitch and S. Poliakoff, Jamesburg, N. J.—p. 553.
Spontaneous Reactions to Personality Inventory. R. R. Willoughby and Mary Elizabeth Morse, Providence, R. I.—p. 562.
Further Study of Maternal Rejection. H. W. Newell, Baltimore.—p. 576.
Economic Security and Children's Attitudes to Parents. H. Meltzer, St. Louis.—p. 590.
Follow-Up Method in Child Guidance Work: Report on Method of Follow Up Used at the Child Guidance Home. Florence M. Rosenthal and Gertrude D. Pinsky, Cincinnati.—p. 609.
Application of Psychoanalytic Methods to Study of Mental Retardation. Leona Chidester and K. A. Menninger, Topeka, Kan.—p. 616.
Recreational Therapy in Prepsychotics. G. J. Rich, Milwaukee.—p. 626.
Some Experimental Contributions to Psychology and Psychopathology of Stutterers. E. Ingebregtsen, Lysaker, Oslo, Norway.—p. 630.

Gonadal Disturbances in Behavior Problems.—Molitch and Poliakoff observed eighty-one boys with gonadal disturbances from the standpoint of diagnosis, mental level, school achievement, behavior, personality and treatment. Except for those with delayed secondary sexual development, gonadal disturbances are not of frequent occurrence in boys with behavior problems. Boys with deficient gonadal function tend to be brighter than the control group. The children with hypergonadism are below the average of the control group. The school attendance and achievement were not much different from that of the control group, but the boys with undescended testes were the most serious school behavior problems. The offenses causing commitment consisted essentially of truancy and stealing. This is equally true for the control group, but the boys with hypogonadism were particularly noted in the stealing category. Sexual offenses were quite rare, and occurred only in one boy with hypergonadism. The boys with gonadal dysfunctions were found to be unstable, immature and infantile. The children with undescended testes were the most unstable, but the entire group were less deviated than children with dyspituitarism. Within the institution the boys with gonadal disturbances were making a good school adjustment but were among the retarded from the standpoint of conduct and work. Eleven boys with undescended testes were treated with the gonadotropic factor from the urine of pregnancy, with excellent results in seven cases.

Archives of Dermatology and Syphilology, Chicago

34: 935-1100 (Dec.) 1936

Atopic Dermatitis (Disseminated Neurodermatitis) of Young Adults: Analysis of Precipitating Factors in 101 Cases and Report of Ten Cases with Associated Juvenile Cataract. L. A. Brunsting, Rochester, Minn.—p. 935.
Cutaneous Action of Radium in Presence of Constant Suction. W. M. Millar, Cincinnati.—p. 958.
Effect of Irradiation and Irradiation Plus Sensitization on Yeastlike Fungi and Related Organisms. Paulina Gomez-Vega, Bogota, Colombia, South America.—p. 961.
Superficial Epitheliomatosis. W. A. Rosenberg, Chicago.—p. 973.
Atrophaderma Reticulatum. L. H. Winer, Minneapolis.—p. 980.
*Bilateral Herpes Zoster Complicating Cutaneous, Osseous and Pulmonary Tuberculosis. E. Epstein and H. P. Jacobson, Los Angeles.—p. 989.
Hemangio-Endothelioma. S. E. Sweitzer and L. H. Winer, Minneapolis.—p. 997.
Eczema Vaccinatum. J. W. Tedder, New Orleans.—p. 1008.

Bilateral Herpes Zoster Complicating Tuberculosis.—Epstein and Jacobson reviewed the literature and found reports of only forty-six instances of bilateral zoster. The articles

reviewed merely presented their cases briefly without discussing the phenomenon at any length. The authors had the opportunity to observe a patient in whom bilateral zoster developed while he was in the hospital for cutaneous, osseous and pulmonary tuberculosis. The study gives no reason to doubt the theory that herpes zoster is caused by a virus. Among the possible predisposing factors may be listed "rheumatism and heart disease," syphilis, malaria or ingestion of quinine, neurosyphilis, acute arsenic poisoning, diphtheria or administration of diphtheria antitoxin, sunburn and tuberculosis of the spine. In the majority of cases no such factors could be found. The old theory that bilateral zoster is usually associated with syphilis or with the administration of arsenic is not supported by the series reviewed. A relationship between bilateral herpes zoster and varicella could not be established in any case. The severity of the eruption and of the subjective symptoms was no greater in patients with bilateral than in those with unilateral zoster. Recovery from bilateral zoster is about as rapid as that from unilateral zona. Persistent scarring has been noted in a number of instances, as in the present case. Recurrences were abnormally frequent, two cases of recurrence being noted in this small series. An eruption of scattered vesicles on the trunk and extremities was present in the authors' patient. As a rule mild leukocytosis is noted in the blood, the increase in the number of leukocytes being most marked in the percentage of polymorphonuclear leukocytes. The Wassermann reaction of the spinal fluid was reported to be normal in all the cases in which the fluid was examined. The present patient is the only one in the series in whom roentgenologic examination of the vertebrae revealed gross abnormalities. While herpes zoster usually presents a characteristic picture, confusion of the bilateral type with herpes simplex is apt to occur. This is especially true in cases of extensive eruptions of the latter. Other conditions that may cause difficulty in diagnosis include generalized herpes, varicella and dermatitis venenata.

Archives of Neurology and Psychiatry, Chicago

36: 1155-1414 (Dec.) 1936

Epidemic Encephalitis (St. Louis Type) in Toledo, Ohio. K. Löwenberg, Ann Arbor, Mich., and T. Zbinden, Toledo, Ohio.—p. 1155.
*Subacute Combined Degeneration of Spinal Cord in Pernicious Anemia: Results of Treatment in Seventy-Four Consecutive Cases with Certain Clinical Observations. H. H. Hyland and R. F. Farquharson, Toronto.—p. 1166.
Electric Potentials of the Brain in Certain Types of Mental Deficiency. G. Kreezer, Vineland, N. J.—p. 1206.
Action Potentials of the Brain in Normal Persons and in Normal States of Cerebral Activity. H. Davis and Pauline A. Davis, Boston.—p. 1214.
Electro-Encephalogram in Diagnosis and in Localization of Epileptic Seizures. F. A. Gibbs, W. G. Lennox and Erna L. Gibbs, Boston.—p. 1225.
Effect on Electro-Encephalogram of Drugs and Conditions Which Influence Seizures. W. G. Lennox, F. A. Gibbs and Erna L. Gibbs, Boston.—p. 1236.
Vasomotor Tonus of Denervated Artery: Control of Sympathectomized Blood Vessels by Sympathomimetic Hormones and Its Relation to Surgical Treatment of Patients with Raynaud's Disease. J. C. White, A. M. Okelberry and G. P. Whitelaw, Boston.—p. 1251.
Histologic Studies of the Brain in Cases of Fatal Injury to the Head: VI. Cyto-Architectonic Alterations. C. W. Rand and C. B. Courville, Los Angeles.—p. 1277.
Primary Myopathies: Report of Thirty-Six Cases and Review of Literature. S. Hurwitz, San Francisco.—p. 1294.
Graduated Jugular Compression with Manometric Tracings of Spinal Fluid Pressure. W. T. Grant and W. V. Cone, Montreal.—p. 1317.
Sickle Cell Anemia as Cause of Cerebral Vascular Disease. R. H. Kampmeier, Nashville, Tenn.—p. 1323.

Degeneration of Spinal Cord in Pernicious Anemia.—Hyland and Farquharson report the results of treatment in seventy-four persons with pernicious anemia associated with definite subacute combined degeneration of the spinal cord who were admitted consecutively to the public wards of the Toronto General Hospital between June 1926 and June 1933. Eight patients were moribund on admission to the hospital and died within a few days. The remaining sixty-six patients were treated with large amounts of liver preparations and prolonged rest. During a period of from four to twelve months in the hospital and subsequent observation in a follow-up clinic, forty-one showed marked and sixteen moderate improvement, while the condition remained stationary in nine. In no case was there real progression of the neurologic lesion. Improvement was maintained in all cases in which therapy was maintained as directed. The most important factor in treatment is the administration of large amounts of liver preparation, the dose recommended being at least twice that required to bring about a prompt remission in a patient with anemia. Intramuscular therapy is the method of choice. The best results are obtained when the patient is kept at rest in bed during the early months of treatment. The level of hemoglobin is not a satisfactory index of the adequacy of liver therapy. Subacute combined degeneration may develop and progress while a patient takes sufficient liver to prevent the development of definite anemia. The relief of the various symptoms and signs of subacute combined degeneration is due to an improvement in function of the fiber tracts of the cord. The tendency to segmental distribution of the impairment indicates an origin in the spinal cord. Under adequate liver therapy a definite change in the pathologic picture occurs. All signs of active degeneration disappear, leaving an apparently healed lesion. Associated with this change there is great symptomatic improvement in the majority of cases. By administration of liver therapy in adequate amount, subacute combined degeneration can be prevented, its progression completely arrested and great improvement obtained, especially in cases of short duration. It is important that treatment be continued for prolonged periods before concluding that no improvement will occur.

Canadian Medical Association Journal, Montreal

35: 593-708 (Dec.) 1936

Radiologic Treatment of Cancer 1929-1935: V. Carcinoma of the Tongue. G. E. Richards, Toronto.—p. 593.
Id.: VI. Intra-Oral Lesions (Except the Tongue). G. E. Richards, Toronto.—p. 599.
*Endometrial Hyperplasia: Clinical Entity. E. M. Blair, Vancouver, B. C.—p. 603.
Hemorrhagic Encephalitis from Neoarsphenamine in Pregnancy: Report of Case with Unusual Widespread Vascular Paralysis. F. E. Cormia, Montreal.—p. 610.
Effect of Estrogenic Hormones on Nasal Mucosa: Their Rôle in Nasosexual Relationship, and Their Significance in Clinical Rhinology. H. Mortimer, R. P. Wright and J. B. Collip, Montreal.—p. 615.
*Heparin and Vascular Occlusion. D. W. G. Murray, L. B. Jaques, T. S. Perrett and C. H. Best, Toronto.—p. 621.
Menorrhagia and Its Modern Treatment. E. Shute, London, Ont.—p. 622.
Serum Therapy. C. E. Dolman, Toronto.—p. 628.
Some of the Newer Drugs. V. E. Henderson, Toronto.—p. 636.
Volvulus of the Small Intestine. J. C. Luke, Montreal.—p. 640.
Roentgen Radiation Treatment of Chronic Cough Occurring During Childhood. C. Liebman, Montreal.—p. 643.
Treatment of Infantile Scurvy with Ascorbic Acid: Preliminary Report. P. Letondal, Montreal.—p. 646.
Streptococcic Meningitis: Report of Eight Cases: Two Recoveries. F. T. Cadham, Winnipeg, Manit.—p. 648.
Essential Thrombocytopenic Purpura Haemorrhagica: Report of Six Operative Cases. C. G. Geggie, Edmonton, Alta.—p. 651.
Erythrocyte Count and Hemoglobin Percentage in Blood of Adult Males in Saskatchewan. J. Fidden and C. Witney, Saskatoon, Sask.—p. 654.
Some New Thoracic Surgical Instruments. N. Bethune, Montreal.—p. 656.

Endometrial Hyperplasia.—Blair believes that the subject of endometrial hyperplasia is so interlocked with fibromyomas that any discussion of the former from a clinical standpoint without including the latter is incomplete. There were eighty-three hysterectomies for fibromyomas in the Vancouver General Hospital in 1934. Of these, sixty-seven showed definite hyperplasia of the endometrium. Such a uniform finding of hyperplasia among fibroid uteri is no coincidence. Indeed, there seems to be a close relationship between these two groups of cases. Each is a group of bleeding uteri in nearly every case; each has the same sort of bleeding surface in the majority of cases—a hyperplastic endometrium; each appears at about the same time in life, and each is treated in the same radical way. In other words, are fibromyomas of the uterus as well as endometrial hyperplasia caused by hypersecretion of estrogen? Fibroids seem to appear with the tide of civilization, and with them march hand in hand the spread of pelvic infection. When the surface of the ovary becomes so affected that the follicle cannot rupture, there is a gradual increase in estrogen in the circulation with no progestin to act as a buffer. Then appears the primary overstimulation of the endometrium, endometrial hyperplasia, and the ultimate overstimulation of the myometrium, with gradual fibroid formation. Fibromyomas are seen only in the human race; even the higher apes are said to be relatively immune. Also a number of the organisms which attack mucous membranes, particularly the gonococcus,

are active only in man. Infection is the only cause of endometrial hyperplasia or fibromyomas, but any entity that inhibits ovulation may cause it, and pelvic infection is a common one. Attention should be drawn more toward the ovary and less toward the uterus in a search for the cause of the trouble. Preliminary biopsy of the endometrium should have a greater place in the preoperative calculations than heretofore. Thorough endometrial biopsy (curettage) and the artificial menopause should have a greater place in the treatment of selected cases than is generally practiced. Supplementary endocrine therapy should continue to attract the profession in the hope that it may eventually prove satisfactory.

Heparin and Vascular Occlusion.—Murray and his associates studied the influence of heparin in the prevention of the occlusion of traumatized veins in dogs. The evidence indicates that no occlusion occurs while heparin is being injected intravenously and if its administration is continued for a sufficient length of time healing of the intima takes place and there is a greatly reduced tendency for the vessel to occlude when injection is discontinued. Heparin also effectively prevents the vascular occlusion that follows the administration of sodium ricinoleate. Heparin may be injected intra-arterially in an extremity at such a rate that the blood flowing through the limb is definitely affected, while much less effect on the blood as a whole is produced (regional heparinization). The remarks on the effects of heparin refer only to the results of general heparinization. To secure this general effect, heparin is injected intravenously and the blood throughout the body is rendered incoagulable to a degree that depends on the amount of heparin injected. The cruder preparations of heparin had definite toxic effects in dogs, while the more highly purified material (70 units per milligram) has produced remarkably little disturbance. A substance effective in the prevention of vascular occlusion in animals due to mechanical or chemical causes deserves a clinical trial, provided it can be shown that doses effective in delaying coagulation of the blood have no deleterious results. The effects of the administration of purified heparin to patients was studied in May 1935 and a detailed report of the clinical experience is to be presented.

Canadian Public Health Journal, Toronto

27: 367-420 (Aug.) 1936

Recent Outbreak of Hemorrhagic Smallpox in British Columbia. J. W. McIntosh, E. D. Carder and C. E. Dolman, Vancouver, B. C.—p. 367.
Complement Fixation Reaction in Variola. J. Craigie and F. O. Wishart, Toronto.—p. 371.
Progress in Public Health in Canada. C. G. Power.—p. 380.
Methods of Teaching Psychiatric Nursing and Mental Hygiene. E. R. Dick, Toronto.—p. 385.
Staphylococcic Infections of Bovine Udder. R. Gwatkin, S. Hadwen, Toronto, and H. M. LeGard, Weston.—p. 391.

Iowa State Medical Society Journal, Des Moines

26: 665-720 (Dec.) 1936

Chronic Mastoiditis and Its Therapy. S. J. Kopetzky, New York.—p. 665.
*Intra-Ocular Lesions Associated with Pregnancy and Their Prognostic Significance. D. O. Bovenmyer, Ottumwa.—p. 670.
Syphilis versus Carcinoma of Stomach: Thorium Dioxide Injection: Case Report. A. M. Gordon, Des Moines.—p. 674.
Orthoptic Treatment of Squint. R. E. Russell and H. O. Gardner, Waterloo.—p. 676.
Developmental Anomaly of the Male Genitalia. L. M. Folkers, Iowa City.—p. 681.
Demonstrating Calcified Valve Leaflets by X-Ray in a Patient with Aortic Stenosis. G. R. McCutchan, Council Bluffs, and M. C. Andersen, Omaha.—p. 682.

Intra-Ocular Lesions Associated with Pregnancy.—Bovenmyer declares that in the toxic pregnant woman the slightest disturbance referable to the eyes, a mere dimness or inconsiderable blurring of vision, is a danger signal. Control of the eyegrounds of the toxic patient my give timely warning of a threatened catastrophe. Retinitis occurring in a pregnant woman may be connected with a chronic nephritis present before pregnancy, or it may be an expression of a toxemia of pregnancy that may or may not be giving rise to a concomitant pregnancy nephritis. The prognosis for life and health in the pregnant woman with retinitis will depend largely on whether or not there is a chronic nephritis. Because of the greater danger from a retinitis that has developed on the basis of a nephritis antedating pregnancy, it is important to find, if possible, some indications in the eyegrounds to distinguish between the types of retinitis. The presence of sclerotic arteries denotes a previous nephritis with an accompanying hypertension, and their absence denotes, though less positively, that the retinitis is gestative. Radially disposed streaks of exudate, the star figure, are looked on as originating from a preexisting renal disease. The view accepted by the majority seems to be that the prospects of return of good vision are favorable, with certain exceptions or qualifications, such as that the chances are hardly favorable if there are changes in the macular region or if there is retinal detachment or papilloretinitis. Symptoms pointing to intra-ocular involvement and eyeground changes, showing that the toxins have attacked the retina and optic nerve, present to the physician the grave responsibility of deciding whether or not prompt emptying of the uterus is indicated to save the mother's life or to preserve her future health or vision. The preeclamptic woman and the woman with pernicious vomiting of pregnancy should have the eyegrounds controlled frequently with the ophthalmoscope. Ocular complications are of serious import in pernicious vomiting; Stander regards the appearance of hemorrhagic retinitis in pernicious vomiting as an absolute indication for immediate termination of the pregnancy. Instead of attacking the peripheral nervous system, as in retinitis, the toxins of pregnancy may attack the central nervous system in the visual center. Here belong those cases of eclampsia with and without convulsions, with amaurosis, in which there are no changes in the eyegrounds or at most a fleeting edema of the papilla. The visual disturbances may be caused by insult to the cortex. Toxic amaurosis, Bruce says, is one of the most valuable signs of an impending eclampsia. In cases of disease of the optic nerve in pregnancy, a hypophyseal origin of the disturbance should be suspected. Definite tumor symptoms need not be present; to save the sight, the continuing hyperplasia must be checked by emptying the uterus.

Journal of Infectious Diseases, Chicago

59: 225-350 (Nov.-Dec.) 1936

Slow Lactose-Fermenting Bacteria Pathogenic for Young Chicks. K. H. Lewis and E. R. Hitchner, Orono, Maine.—p. 225.
Epizootic Streptococcic Myocarditis in Guinea-Pigs. M. Viola Rae, Toronto.—p. 236.
Dissociation of Bacteria Granulosis. R. W. Harrison, St. Louis.—p. 244.
Influence of Rachitogenic and Antirachitogenic Diets on Incidence of Spontaneous Infections in Albino Rats. Juanita Thompson, New York.—p. 253.
Mucin as an Aid in Experimental Production of Lobar Pneumonia. W. J. Nungester and L. F. Jourdonais, Chicago.—p. 258.
Antigenic Polysaccharide Fraction of Ascaris Lumbricoides (from Hog). D. H. Campbell, Chicago.—p. 266.
Comparison of Efficiency of Phenol, Liquor Cresolis, Formaldehyde, Sodium Hypochlorite and Sodium Hydroxide Against Eberthella Typhi at Various Temperatures. E. C. McCulloch and Stella Costigan, Philadelphia.—p. 281.
Pathogenicity of Brucella Abortus for White Mice. A. Ber, Warsaw, Poland.—p. 285.
Modified Technic for Agglutination in Brucella Infection. C. R. Donham and C. P. Fitch, St. Paul.—p. 287.
*Comparative Values of Clinical and Postmortem Blood Cultures. C. G. Burn and D. F. Harvey, New Haven, Conn.—p. 296.
Pathogenesis and Fate of Tubercle Produced by Dissociated Variants of Tubercle Bacilli. W. H. Oatway Jr. and W. Steenken Jr., Trudeau, N. Y.—p. 306.
Haemophilus Pertussis on Chocolate Brown Agar. J. A. Toomey, W. S. Takacs and Katherine Ranta, Cleveland.—p. 326.
Nature of Bacterial-Specific Intradermal Antiserum Reaction. L. Foshay, Cincinnati.—p. 330.
Elicitation of Specific Phage from Autoclaved (Lifeless) Material: Studies in Bacterial Metabolism: CVII. A. I. Kendall, Chicago.—p. 340.

Clinical and Postmortem Blood Cultures.—Burn and Harvey obtained clinical and postmortem blood cultures from 212 individuals, 147 of which were positive and sixty-five were negative for bacterial growth. Agreement between both blood cultures occurred in 125 of the 212 cases and disagreed in eighty-seven. Contaminants were responsible for the discrepancies in twenty-two. The greatest discrepancy was due to the presence of negative cultures in seventy-three of the individuals. Sixty-five of these were in the clinical cultures and only eight at necropsy. The most important factor responsible for the negative clinical cultures in these studies was the time at which the last clinical culture was taken with relation to the death of the individual. Other influences were those controlling bacterial invasion into the blood stream, the development of mixed infections in the tissues and anatomic injuries to mucosal linings

permitting transient bacteremias from the bacterial reservoirs of the body. Administration of specific immune serum, the phenomenon of bacterial dissociation and errors in technic of culturing played a definite but minor part in these differences. Postmortem autolysis of the tissues tends to destroy the more sensitive pathogenic bacteria, provided the time interval between death and postmortem examination is more than twelve hours.

Journal of Lab. and Clinical Medicine, St. Louis

22: 221-328 (Dec.) 1936

Experiments on Maintenance of Mineral Density in the Skeleton. Y. A. Venar and T. W. Todd, Cleveland.—p. 221.
*Granulocytopoietic Fractions of Yellow Bone Marrow. J. Zichis, Detroit. —p. 231.
Comparison of Direct versus Indirect Method of Estimating Lipid Composition of Red Blood Cells. E. M. Boyd, Kingston, Ont.—p. 237.
Blood Cholesterol and Manic Depressive Psychosis. P. G. Schube, Boston.—p. 240.
Albuminuria Solaris. A. Galambos and W. Mittelmann, New York. —p. 246.
Juvenile Diabetes Mellitus: Study of Insulin-like Reactions Unrelated to Hypoglycemia. H. M. Feinblatt, Brooklyn; assisted by E. A. Ferguson.—p. 249.
Idiopathic Amyloid Disease of the Heart. A. J. Kerwin, Toronto.—p. 255.
Observations on Normal Emptying Time of Stomach of Dog, Using a Mixed Meal. E. J. Van Liere, G. Crisler and I. A. Wiles, Morgantown, W. Va.—p. 261.
Bactericidal and Bacteriostatic Properties of Diothane Solutions. E. G. Gerwe and R. Y. Gottschall, Cincinnati.—p. 263.
Possible Importance of Mediums Causing Surface and Subsurface Growth of Pathogenic Fungi to Diagnosis and Treatment of Disease. J. W. Williams, Boston.—p. 268.
Quantity of Iodine in Thyroid Gland of Rabbit and Influence Thereon of Diet of Cabbage. A. W. Downs, Edmonton, Alta.—p. 270.
Pollen Content of Air of San Diego, Calif. C. L. Stealy, San Diego, Calif., with technical assistance of Helen McMichael.—p. 273.
Variations in Blood Cholesterol of Man Over a Time Period. P. G. Schube, Boston.—p. 280.
Studies in Bacteriophage: III. Significance of Tests for Inhibition of Bacteriophage Phenomenon by Human Serum. Helen Zaytzeff-Jern and F. L. Meleney, New York.—p. 284.
The Doctor as a Scholar. E. Podolsky, Brooklyn.—p. 290.

Granulocytopoietic Fractions of Yellow Bone Marrow.—Zichis isolated fractions that appear to have granulocytopoietic properties by saponifying yellow bone marrow with alcoholic potassium hydroxide at room temperature. The active fractions were isolated by separation with distilled water and by petroleum benzin extraction. The former method affords a comparatively simple means of separation. However, by the latter method it is possible to obtain the fraction in a more concentrated form. In addition, the preparation isolated by the first method is active when administered orally, and the other preparation is active when administered intramuscularly to rabbits in which a condition of granulocytopenia was produced experimentally. Although a very highly active concentrate was prepared, it will be necessary to conduct further studies on the purification and concentration before any suggestion of chemical composition can be made. A modification of the method employed by Dennis was used to produce granulocytopenic conditions in rabbits and rats. This proved to be satisfactory. Although the condition obtained by this procedure may not be identical with that in human beings, it affords a convenient laboratory method of demonstrating the granulocytopoietic activity of concentrates of yellow bone marrow.

Kansas Medical Society Journal, Topeka

37: 485-526 (Dec.) 1936

Injection Method of Treatment for Hernia. A. J. Weber, Milwaukee. —p. 485.
Primary Renal Neoplasm, Running a Febrile Course and Terminating in Fatal Hemorrhage Following Erosion of Coronary Vein of Stomach: Case. W. L. Butler and P. E. Craig, Stafford.—p. 488.
Brain Abscess: Clinicopathologic Résumé and Report of One Case. H. N. Roback, Topeka, and J. N. Sherman, Chanute.—p. 492.
*Surgical Treatment of Injuries to Peripheral Nerves. A. W. Adson, Rochester, Minn.—p. 497.

Surgical Treatment of Injuries to Peripheral Nerves.—Adson asserts that the surgical treatment of injuries of the peripheral nerves is governed by the physiopathologic phenomena of degeneration and regeneration of these nerves. The character of the injury, whether it is contusion of a nerve, compression of a nerve by a blood clot or callus, a clean cut section or extensive laceration resulting in loss of nerve tissue or in avulsion of a nerve, more or less determines the type of surgical operation that is indicated. The degree of paralysis and the interval between the time of the injury and the repair are important factors in selecting the operative procedures and in determining the indications for operation. The ideal operative measures are neurolysis of nerves which are partially paralyzed as a result of constriction and end-to-end suture following removal of the neuromas. Suturing should be performed in the first six months following the injury; interrupted silk sutures should be placed in the epineurium, without tension. Prevention of undue traction on the suture line and gentle massage of the paralyzed muscles during the period of recovery are essential to successful regeneration.

Laryngoscope, St. Louis

46: 815-898 (Nov.) 1936

Labyrinth Reactions and Their Clinical Importance. A. A. Cinelli, New York.—p. 815.
Practical Points on Submucous Septum Resection: Pitfalls and Corrections. A. F. Laszlo, New York.—p. 840.
Diagnostic and Prognostic Value of Antrum-Irrigated Pus. L. R. Effler, Toledo, Ohio.—p. 848.
Elliott Treatment of Sinus Disease. F. L. Bryant, Minneapolis.—p. 853.
Foreign Body in Bronchus Simulating Carcinoma: Report of Case. B. Welt and S. Weinstein, Brooklyn.—p. 865.
Pneumonography. D. C. Baker Jr., Philadelphia.—p. 873.
Lingual Thyroid. L. T. Buckman, Wilkes-Barre, Pa.—p. 878.

Maine Medical Journal, Portland

27: 235-252 (Dec.) 1936

Recent Advances in Therapy of Addison's Disease. S. R. Webber, Calais.—p. 235.
Tetanus. H. E. Small, Fort Fairfield.—p. 237.
X-Ray Diagnosis of Malignant Tumors. F. B. Ames, Bangor.—p. 239.
Discussion of Cancer Symposium. E. C. Cutler, Boston.—p. 242.

New England Journal of Medicine, Boston

215: 1049-1098 (Dec. 3) 1936

Thyroid Adenomas and Their Clinical Complications, with Especial Reference to Discrete Adenoma. H. M. Clute and H. L. Albright, Boston.—p. 1049.
Foreign Bodies in Air and Food Passages: Report of Nine Recent Cases. C. I. Johnson and C. F. Ferguson, Boston.—p. 1054.
Value of Histologic Differentiation of Basal Cell Carcinomas. S. Warren, Olive Gates and P. W. Butterfield, Boston.—p. 1060.
Prostigmine Test in Myasthenia Gravis: II. H. R. Viets, Boston, and R. S. Mitchell, Glen Falls, N. Y.—p. 1064.
*Treatment of Delirium Tremens with Sodium Evipal. P. Sperber, Providence, R. I.—p. 1065.
The Management of Patients with Varicose Veins. E. T. Whitney and P. A. Consales, Boston.—p. 1068.

Treatment of Delirium Tremens.—Sperber points out that the sodium salt of *n*-methyl-cyclohexenylmethyl malonylurea immediately after intravenous injection in ordinary therapeutic doses aborted the attack in three typical cases of delirium tremens. The patients fell asleep for a period of from two to four hours, at the end of which they awoke for a brief interval and then returned to a deep sleep, the latter being the usual reaction following the natural ending of an attack of delirium tremens. On awaking, all were fully oriented and had no recollection of the attack. At no time was there a recurrence of symptoms. The observations suggest that the drug may be a specific remedy for delirium tremens, and this small series of cases is reported in the hope that its true value will be determined by others. Its possible value as a preventive in the predelirium state and as an abortifacient in acute alcoholic psychosis is suggested.

New Jersey Medical Society Journal, Trenton

33: 679-756 (Dec.) 1936

Tumors of Reticulo-Endothelial System: Medical Aspect. R. J. Mullin, Newark.—p. 685.
Id.: Infections and Tumors of Reticulo-Endothelial System. H. C. Barkhorn, Newark.—p. 687.
Id.: Bone Changes in Morbid Processes of Cytoplasmic Reticulum, N. J. Furst, Newark.—p. 690.
Id.: Tumors of Mediastinum Arising from Reticulo-Endothelial System Roentgenologically Considered. W. G. Herrman, Asbury Park.—p. 693.
Id.: Treatment of Tumors of Reticulo-Endothelial System. I. I. Kaplan, New York.—p. 696.
Id.: Morbid Processes of Cytoplasmic Reticulum. W. Antopol, Newark. p. 701.
Bone Marrow in Leukemia. A. Yaguda, Newark.—p. 705.
The Two-Stage Principle in Thyroid Surgery. M. Fellman, Jersey City. —p. 712.

Northwest Medicine, Seattle

35: 441-490 (Dec.) 1936

Use of Apple and Apple Products in Treatment of Summer Diarrheas and Dysenteries. I. A. Manville, Elizabeth M. Bradway and Avoca S. McMinis, Portland, Ore.—p. 441.
*Therapeutic and Preoperative Actions of Raw Apple Pulp. J. E. Bittner Jr., Yakima, Wash.—p. 445.
Legalized Blackmail, the Malpractice Racket. W. Kelton, Seattle.—p. 449.
Petrous Tip Abscess. H. V. Adix Jr., Portland, Ore.—p. 455.
Calcified Fibromyoma of Uterus Simulating Large Vesical Calculus. A. H. Peacock, Seattle.—p. 456.

Actions of Raw Apple Pulp.—About five years ago Bittner began using the apple treatment in all adults and children suffering from intestinal infections. In 946 patients less than 10 years of age in whom severe diarrhea was a symptom there was only one death under apple therapy. In this case meningeal symptoms were present at the time treatment was started. Previous conceptions regarding the action of apple pulp on the intestinal tract must be revised entirely. The accepted theory that bulk and roughage are irritating to the intestine and stimulate peristalsis must be excepted in the case of apples, as the action of this bulk on the intestinal tract is soothing and decidedly constipating even to the highly inflamed and irritated intestine of young infants suffering from severe dysentery. There are definite rules that must be followed if the best results are to be obtained. The apples must be eaten on an empty stomach, they must be finely chewed, they must have sufficient time to leave the stomach before being mixed with other foods, foods of high protein content seriously minimize the effect of the apple and in seriously acute cases will absolutely neutralize the beneficial effects expected, and cooking temperature greatly impairs the therapeutic value of apples. It is the author's belief that the action of apple pulp is not one of a germicidal nature but that it is entirely one of absorption of the toxic effects of bacterial invasion. He believes that the only effect apple pulp has on the intestinal flora is that of removing exotoxic products of bacterial growth, thereby relieving the system from the absorption of these products and allowing the blood stream defenses to concentrate directly on the bacterial invasion. In other words, the action is similar to the drainage of an abscess.

Oklahoma State Medical Assn. Journal, McAlester

29: 425-468 (Dec.) 1936

General Discussion of Fractures of the Spine. D. H. O'Donoghue, Oklahoma City.—p. 425.
Unpadded, Direct or Skin Plaster-of-Paris Cast in Treatment of Long Bone Fractures. R. G. Jacobs, Enid.—p. 431.
*Giant Cell Tumors of Bone with Specific Reference to Parathyroidism. G. L. Goodman, Yukon.—p. 434.
Importance of Heat in Gynecologic Therapeutics. K. J. Wilson, Oklahoma City.—p. 440.
Infections and Burns. T. McElroy, Ponca City.—p. 443.
Congenital Cysts. D. D. Paulus, Oklahoma City.—p. 447.

Giant-Cell Tumors of Bone and Parathyroidism.—Goodman believes that two factors must be concerned in the development of a giant-cell tumor. It is readily seen that, because hyperparathyroidism exists, a giant-cell tumor does not necessarily follow, and that an injury alone does not always produce a giant-cell tumor. However, an injury in addition to hyperparathyroidism will probably produce such a tumor. These two factors produce a giant-cell tumor because the bone is already rarefied and the injury causes a hemorrhage in that space. The hemorrhage organizes and forms granulation tissue. This tissue proliferates and so continues as "proud flesh" or as granulation tissue does on certain occasions on the surface. The granulation tissue presses on the walls and they expand, and, when bone is being destroyed, giant cells are always present. The giant cells are probably nothing but a group of the tumor cells grouped together, the better to digest the bone. The idea that giant-cell tumors are simply granulation tissue modified by confined hemorrhage is supported by the facts that (1) the two are similar in appearance microscopically and macroscopically, (2) both respond to cauterization, (3) irradiation will slow or completely inhibit the growth of either, (4) operative removal in either case will result in a cure and (5) both have a tendency to recur if treated indifferently.

Pennsylvania Medical Journal, Harrisburg

40: 167-248 (Dec.) 1936

Present Status of Endocrinology in Its Relation to the Child. R. G. Hoskins, Boston.—p. 167.
Psychology of Deafness. K. M. Day, Pittsburgh.—p. 177.
Distribution of Blindness in Pennsylvania. A. Cowan, Philadelphia, and Bernice C. English, Harrisburg.—p. 180.
Control of the Mentally Unfit. C. H. Henninger, Pittsburgh. —p. 184.
Contributions of Physiologic Laboratory to Clinical Medicine. E. Lodholz, Philadelphia.—p. 189.

Philippine Journal of Science, Manila

59: 455-604 (April) 1936. Partial Index

Effect of Filtration on Sanitary Quality of Water of Metropolitan Water District. P. I. de Jesus and J. M. Ramos, Manila.—p. 455.
Physicochemical Factors in Anopheline Ecology: I. Studies on Nitrogen. P. I. de Jesus, Manila.—p. 473.
Is Vitamin B_1 the Accelerating Factor in Fermentation of Sugar by Propionic Acid Organisms? V. G. Lava, R. Ross and K. C. Blanchard.—p. 493.
Observations on Life Cycle of Gnathostoma Spinigerum. C. M. Africa, P. G. Refuerzo and E. Y. Garcia, Manila.—p. 513.

60: 1-98 (May) 1936. Partial Index

Extract from Silkworm Pupae: Useful Substitute for Meat Extract in Preparation of Bacteriologic Culture Mediums. M. Nukada, Omori, Tokyo, Japan.—p. 11.
Dirofilaria Immitis Leidy and Its Culicine Intermediate Hosts in Manila, I. F. del Rosario, Manila.—p. 45.

Public Health Reports, Washington, D. C.

51: 1675-1706 (Dec. 4) 1936

Sickness Among Male Industrial Employees During Second Quarter and First Half of 1936. D. K. Brundage.—p. 1675.
Physiologic Response of Peritoneal Tissue to Certain Industrial and Pure Mineral Dusts. J. W. Miller and R. R. Sayers.—p. 1677.
*Glutathione and Malignant Growth. C. Voegtlin, J. M. Johnson and J. W. Thompson.—p. 1689.

Glutathione and Malignant Growth.—Voegtlin and his associates found that it is possible by means of a diet deficient in cystine (and presumably methionine) to cause a marked slowing or even a cessation of the growth of a typical neoplasm (spontaneous mammary carcinoma). The same diet inhibits normal growth of young mice. Following a period of inhibited tumor growth, the administration of either cystine or glutathione causes a marked stimulation of tumor growth. A similar increase in the growth rate of young mice is produced by the cystine supplement. Dyer and du Vigneaud (1936) reported that the growth of normal rats on a cystine deficient diet is accelerated by the oral or subcutaneous administration of glutathione. It would seem, therefore, that with respect to the growth-stimulating response to cystine or to glutathione there is no essential difference between normal growth of young mice and rats and the growth of the spontaneous mammary carcinoma. It is believed that progressive neoplastic growth requires a sufficient supply of cystine (or cysteine) for the synthesis of tumor proteins. Since glutathione occurs not only in normal but also in malignant tissues, it would seem also that the growing tumor must be supplied with glutathione or its constituent amino acids, particularly cystine (or cysteine). Evidence is accumulating which indicates that the proliferation of this typical malignant tumor can be inhibited by diets deficient in certain essential amino acids or peptides. It remains to be seen whether other types of malignant tumors, especially those induced by carcinogenic substances, behave similarly.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

12: 1-168 (Sept.) 1936

Recurrent Tropical Lymphangitis, with Especial Reference to Streptococcic Infection. P. Morales Otero, San Juan.—p. 1.
Biologic Characteristics of Hemolytic Streptococci Isolated in Puerto Rico. P. Morales Otero and A. Pomales Lebrón, San Juan.—p. 3.
Dick's Test in Puerto Ricans. R. Ruiz Nazario and P. Morales Otero, San Juan.—p. 34.
Immunologic Response of Cases of Recurrent Tropical Lymphangitis to Hemolytic Streptococci and Their Products. P. Morales Otero and A. Pomales Lebrón, San Juan.—p. 43.
Clinical Findings in 139 Cases of Recurrent Tropical Lymphangitis. J. Suárez, San Juan.—p. 81.
Treatment of Recurrent Tropical Lymphangitis, with Especial Reference to Therapeutic Value of Streptococcus Vaccines and Filtrates. J. A. Pons, San Juan.—p. 114.

Texas State Journal of Medicine, Fort Worth

32: 509-574 (Dec.) 1936

Pathology of Carcinoma of Colon and Rectum. J. L. Goforth, Dallas. —p. 514.
Roentgen-Ray Diagnosis in Carcinoma of Colon and Rectum. C. F. Crain, Corpus Christi.—p. 517.
Clinical Aspects of Carcinoma of Rectum. H. T. Hayes and H. B. Burr, Houston.—p. 519.
Evaluation of Roentgen and Radium Therapy in Treatment of Malignant Disease of Rectum. E. T. Leddy, Rochester, Minn.—p. 523.
Roentgen Ray Studies of Cirrhosis of Liver. C. L. Martin, Dallas. —p. 527.
Cirrhosis of Liver: Clinical Considerations. J. C. Barton, San Antonio. —p. 529.
Meeting the Requirements for Proper Nutrition in Infancy. J. G. Young, Dallas.—p. 531.
Gynecologic Symptom Complex in Relation to Personality Problems. W. R. Houston, Austin.—p. 534.
Experience with Fever Therapy in a State Hospital. C. H. Standifer, Austin.—p. 537.
Ear, Nose and Throat Problems in Tuberculosis. W. E. Vandevere, El Paso.—p. 539.
Eye Injuries. J. H. Carter, Beaumont.—p. 542.
Glomus Tumor. A. G. Schoch and H. S. Aronson, Dallas.—p. 545.
Thrombo-Angiitis Obliterans in Negroid: Case. G. W. Parson, Texarkana.—p. 546.
*Undulant Fever and Its Relation to Public Health. F. B. Green, Lufkin.—p. 549.
Relative Values in Public Health Work. E. O. Chimene, Austin.—p. 551.

Undulant Fever and the Public Health.—Green believes that prevention and control measures of undulant fever depend primarily on the ability of the practicing physician to recognize the disease, as 90 per cent of these cases are diagnosed as malaria, typhoid and paratyphoid. The author has had numerous interviews with persons who have suffered undulating febrile attacks, muscular rheumatism, arthritis and orchitis for months before receiving a proper diagnosis through a laboratory blood test. Secondarily it depends on health officials and veterinarians, who should be charged with the responsibility of blood testing all cows and goats supplying milk for human consumption and the elimination of all reactor animals through segregation or destruction, preferably destruction. In areas in which the disease is prevalent or known to exist, the blood test should have precedence over the test for tuberculosis. Until the source of the infection is determined, all milk should be boiled or pasteurized. Human beings having the disease should be treated on the same principles as laid down for typhoid. General sanitary measures should be enforced. Suppression of flies and mosquitoes, allaying of dust and promotion of cleanliness should not be neglected.

United States Naval Med. Bulletin, Washington, D. C.

34: 431-618 (Oct.) 1936

The Posttraumatic Abdomen: Diaphragmatic Hernia as Sequel of War Injuries. L. W. Johnson.—p. 431.
Ventral Hernia as Sequel of Traumatic Abdomen. F. R. Hock.—p. 440.
Repair of Inguinal Hernia. G. G. Herman.—p. 452.
Medical Department of U. S. S. "Ranger." G. C. Rhoades.—p. 456.
Narcolepsy: Report of Three Cases. H. O. Cozby.—p. 471.
Observations on Chromatoid Bodies in Cysts of Endamoeba Histolytica. E. G. Hakansson, with technical assistance of J. F. Buckner and H. A. Down.—p. 478.
Teratomas of the Testicle: General Considerations and Case Report. M. J. Aston.—p. 492.
Vinethene Anesthesia. J. Connolly and R. E. Baker.—p. 499.
Pelvic Surgery and Gynecology. J. L. Schwartz.—p. 507.
Anomalies of Development of the Lumbar Spine. I. E. Stowe.—p. 514.
Phrenic Exeresis. H. V. Hughens.—p. 519.
*The Nodal Triangle. R. A. Nolan.—p. 523.
Phenyl Mercuric Nitrate in Treatment of Otitis Externa and of the Dermatophytoses. F. C. Greaves.—p. 527.
Dangers of Prosthesis for Aviation Personnel. J. L. Brown.—p. 532.
Ear Symptoms Incidental to Sudden Altitude Changes and the Factor of Overclosure of the Mandible. G. E. Willhelmy.—p. 533.

The Nodal Triangle.—Nolan points out that the nodal triangle, an abnormal finding observed in lymphatic influenza, or so-called glandular fever, is easily elicited by gentle, digital palpation, the palpating fingers running along the vessel's course on the surface. The condition when elicited is definite. Sacculated nodes ranging from the size of a pea to that of a bean are in linear arrangement converging at the inner aspect of the knee joint but never below this point. These lymphatic dilatations or sacculations take on temporarily the nature of a lymphangioma or fibroma. They lie in the subcutaneous tissue just below the corium; the skin is normal in appearance and shows no local signs of inflammation over nodal triangular lines. By palpating over these sacculations with pressure, pain is elicited along the nodal chain. The sign is considered of extreme importance for purposes of early differentiation, as a possible explanation for muscular asthenia, and as another check in establishing the fact that the organism or virus causing influenza in some juvenile epidemics has a specific action on the lymphatic system of the body, thereby producing a train of signs and symptoms. When the patient shows by the blood count and other studies an atypical picture of so-called glandular fever and the cervical, axillary and inguinal adenopathy is apparently normal, this sign in the lower extremities will furnish the evidence demonstrating adenomatosis in an anatomic location rarely if ever looked for. Its presence is apparently due to a mechanical irritation (muscle squeeze) during the prodromal or acute introductory stage of the influenza virus affecting the lymphatic system.

Yale Journal of Biology and Medicine, New Haven

9: 1-136 (Oct.) 1936

Medical Expert Testimony. T. P. Murdock, Meriden, Conn.—p. 1.
Studies in the Pathology of Vascular Disease. Elizabeth M. Ramsey, Washington, D. C.; D. W. Gaiser, Spokane, Wash.; G. A. Carden Jr., New York; P. M. LeCompte and R. Tennant, New Haven, Conn. —p. 13.
Vacuum Tube Microvoltmeter for Measurement of Bio-Electric Phenomena. H. S. Burr, C. T. Lane and L. F. Nims, New Haven, Conn.—p. 65.
*Pulmonary Cysts: Review of Subject, with Case Report. A. W. Oughterson and M. Taffel, New Haven, Conn.—p. 77.
Somatic Agglutinin and Immunity in Mouse Typhoid. W. M. Hale, New Haven, Conn.—p. 101.
Dental Changes in Rats Consuming a Diet Poor in Inorganic Salts. S. S. Arnim, Miriam F. Clarke, B. G. Anderson and A. H. Smith, New Haven, Conn.—p. 117.
Date of Organization of Litchfield County Medical Association. W. R. Steiner, Hartford, Conn.—p. 127.

9: 137-198 (Dec.) 1936

The First Published Attack on Perkinism: Anonymous Eighteenth Century Poetic Satire. H. W. Haggard, New Haven, Conn.—p. 137.
Bio-Electric Phenomena Associated with Menstruation. H. S. Burr and L. K. Musselman, New Haven, Conn.—p. 155.
Injection Treatment of Hernia. D. C. Patterson, Bridgeport, Conn. —p. 159.
Osmotic Exchanges in the Blood: Preliminary Report. J. P. Peters, A. J. Eisenman and P. M. Hald, New Haven, Conn.—p. 167.
Carcinolytic Action and Erythrocyte Sedimentation. G. H. Smith and Florence Mack, New Haven, Conn.—p. 173.
Changes in Molar Teeth and Their Supporting Structures of Rats Following Extraction of Upper Right First and Second Molars. B. G. Anderson, A. H. Smith, S. S. Arnim and Aline U. Orten, New Haven, Conn.—p. 189.

Pulmonary Cysts.—Oughterson and Taffel believe that cysts which are filled with fluid and are indistinguishable from intrathoracic neoplasms should be explored and, if possible, removed. Infected cysts which present the same symptoms as those of chronic lung abscess or infected bronchiectasis are subject to the same principles of treatment as those of the so-called chronic nonspecific pulmonary suppuration. The treatment of large infected peripheral cysts is similar to that of chronic encapsulated empyemas with communicating bronchopleural fistulas. Adequate drainage must be instituted. After the infection subsides, cauterization of the bronchial orifices with closure of the wound by muscle pedicle grafts may be carried out. If the cysts are too large to be obliterated in this way, the lobe containing them may be resected. It is believed that pulmonary cysts, like those of the other parenchymatous organs of the body, do not all arise as a result of a single common mechanism but are congenital, inflammatory, mechanical or neoplastic in origin. The clinical manifestations are protean, and the correct diagnosis is frequently made only at operation or at necropsy. The authors used a new therapeutic procedure in their patient suffering from a tension pneumothorax with multiple, large air cysts in the right middle and lower lobes. The bronchial openings communicating with the cysts were made so large and numerous that air could not be withdrawn rapidly enough through a needle. An open thoracotomy was performed, at which time the walls between the cysts were divided and a shrunken upper lobe was disclosed. High negative pressure served to collapse the cysts completely and to expand the upper lobe until it filled the hemithorax. This negative pressure was maintained until the lung became adherent. Physical examination, as well as roentgenograms, revealed normal lung fields two years after the operation. There has been no recurrence of symptoms.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

13: 141-192 (July) 1936

Ether Convulsions. A. S. Hoseason.—p. 142.
Cause and Prevention of So-Called Ether Convulsions. R. V. Hudson. —p. 148.
*Sequels of Anesthesia. G. Kaye.—p. 157.
Modern Treatment by Hypnotics and Basal Narcosis. H. Weese.—p. 177.

14: 1-44 (Oct.) 1936

Gas-Air Analgesia. R. J. Minnitt.—p. 3.
Modern Treatment by Hypnotics and Basal Narcosis. H. Weese.—p. 8.
This Mysterious pH. W. N. Kemp.—p. 23.

Sequels of Anesthesia.—This series includes 2,520 administrations of inhalation anesthetics, personally given or supervised by Kaye in the period from February 1931 to December 1935. Rather more than half of the administrations were performed in hospital practice and the rest in private practice. There were no fatalities on the operating table. One fatal case of pulmonary congestion following entry of vomitus into the lungs was directly attributed to the anesthetic. Two cases of fatal respiratory sequels might perhaps have been averted by a different anesthetic technic. No other postoperative deaths were attributed to the anesthetic. In Australia the "standard" anesthetic is ether, and the gaseous anesthetics are reserved mainly for the less good "anesthetic risks." The choice of anesthetic seldom erred in respect to safety at the time of operation, but it occasionally did so with respect to subsequent respiratory sequels. The incidence of postanesthetic vomiting was investigated in 1,295 cases. The lesser vomiting after gaseous anesthetics as compared with ether was very apparent. The superiority of gaseous anesthetics was manifested in the "no vomiting" and "slight vomiting" classes, and the ratio of moderately severe or severe vomiting was much the same whether gas or ether was employed. Figures indicate the great superiority of gaseous anesthetics over ether in each type of operation, so far as the milder degrees of vomiting were concerned. The more severe grades had much the same incidence, independent of the anesthetic used, a fact which may suggest that certain individuals, for biochemical or physical reasons, are prone to severe vomiting regardless of the anesthetic used. There were fifteen cases of respiratory sequels (bronchitis and pneumonia): three due to a faulty choice of anesthetic, four to technical errors and seven to various causes. The number of cases of postoperative psychosis in the present series was not recorded but was probably five or six. The onset usually occurred several days after operation and bore no apparent relationship to the anesthetic technic. The author has an impression that permanent psychotic changes are encountered rather frequently after the operation of prostatectomy. One patient in the series suffered from corneal abrasion. He had struggled during the induction stage and either received a splash of ether in the eye or, more probably, was injured by the gauze face cover.

British Journal of Dermatology and Syphilis, London

48: 527-592 (Nov.) 1936

Control of Syphilis: Critical Examination of Some of Its Problems. J. H. Stokes.—p. 527.
*Pathogenesis of Hysterical Skin Affections. H. Haxthausen.—p. 563.
Alpha and Beta Ray Therapy in Dermatology. S. Lomholt.—p. 567.

Pathogenesis of Hysterical Skin Disorders.—Haxthausen submitted eight patients with pathomimia to experimental exposure of their skin to mechanical rubbing, Rumpel-Leede's test, ultraviolet irradiation, freezing with carbon dioxide snow and the pricking into the skin of a drop of 1 per cent solution of morphine and 30 per cent solution of silver nitrate. The reactions induced thereby were compared with those following similar experiments conducted on healthy controls. The eight cases of pathomimia presented lesions of varying types, mainly excoriations and ulcerations. Common to them all, however, was their typical artificial stamp. In no single instance, with any one of the tests employed, did there occur a reaction to be distinguished qualitatively from corresponding responses in normal persons. Nor was it possible in any case to demonstrate abnormally severe or particularly persistent reactions. In patients with pathomimia the skin reacted in every way exactly as a normal skin toward the irritants used. Therefore, no ground can be deduced for the supposition of a particularly increased responsive capacity on the part of the skin of patients with pathomimia. With regard to the question of the pathogenesis of these cutaneous disturbances, it would seem reasonable to cast the deciding vote in favor of the psychic changes and to interpret the pathomimic lesions as being determined by influences of a morbid nature acting on a skin reacting alone in a normal manner toward the actual irritative effect. The intensity, however, with which the traumatization is conducted may be dependent on the hypalgesia or analgesia observed so frequently in these patients.

British Journal of Radiology, London

9: 767-838 (Dec.) 1936

Physics and Radiology. J. A. Crowther.—p. 767.
Right-Sided Aortic Arch (Situs Inversus Arcus Aortae). D. E. Bedford and J. Parkinson.—p. 776.
Radical X-Ray Treatment of Malignancy in Larynx and Pharynx. J. H. D. Webster.—p. 799.
*Variation of Doses Adjacent to Certain Arrangements of Intra-Uterine Radon Tubes. T. H. Oddie.—p. 805.
Basophilic Hyperpituitarism. J. F. Bromley.—p. 818.
Spacing of Radiation According to Variation in Radiosensitivity. J. C. Mottram.—p. 824.

Doses of Intra-Uterine Radon Tubes.—Oddie shows that in different methods of treatment of carcinoma of the cervix uteri the ureters may be in danger, to varying extents, of receiving a dose appreciably greater than the minimal dose applied to the area treated. A satisfactory procedure is to have the dose at the ureters only from 75 to 80 per cent of the minimal dose in the region. This is obtainable by a critical choice of the strength and geometric distribution of the various component active lengths employed in the treatment. The adjustments required to effect this reduction in the dose on the ureters necessitate a general reduction of the doses received at most of the points inside the region treated, but the minimal dose in the region may still be maintained at an adequate value to destroy the malignant cells. Since all the other points inside the region receive, in any case, doses considerably in excess of the minimum, this reduction should not result in any loss of efficiency in the treatment. The method is suitable for use with radon, as containers are constructed to the required lengths and linear strengths. However, if radium is used the choice of suitable strength and size is limited. The radiation field from an arrangement of radon tubes can be altered to provide dosages adequate for treatment in the growth and still protect adjacent normal tissue from excessive irradiation.

British Medical Journal, London

2: 1013-1066 (Nov. 21) 1936

Present Status of Cyclopropane. R. M. Waters.—p. 1013.
Acute Rheumatic Meningitis. G. Bourne.—p. 1017.
Abnormal and Temperamental Worker. T. M. Ling.—p. 1019.
Electrotherapy and Its Future. W. J. Turrell.—p. 1022.
Reduction of Sick Wastage After Athletic Injuries. R. S. Woods. —p. 1026.
Incidence of Monilethrix. J. G. Tomkinson.—p. 1027.

Journal of Anatomy, London

71: 1-160 (Oct.) 1936

Termination of Ascending Tracts in Thalamus of Macaque Monkey. W. E. Le Gros Clark.—p. 7.
Sheep's Neopallium: Study of Its Development and Interpretation of Its Convolutions. R. Anthony and J. de Grzybowski.—p. 41.
Intra-Epidermal Nerve Endings. H. H. Woollard.—p. 54.
Endocranial Casts of Ehringsdorf and Homo Soloensis Skulls. C. U. A. Kappers.—p. 61.
Existence of Abdominal Vagal Paraganglions in Adult Mouse. N. Georgmaghtigh.—p. 77.
Secreting Area of Glomerulus. M. H. Book.—p. 91.
Innervation of Pericodontal Membrane. W. Lewinsky and D. Stewart. —p. 98.
Uterine Vein Entries in Rabbit. K. J. Franklin and A. D. McLachlin. —p. 103.
External Configuration of Cerebral Hemispheres of Chimpanzee. A. E. Walker and J. F. Fulton.—p. 105.
*Blood Cysts in Human Cardiac Valves. D. R. Dow and W. F. Harper. —p. 117.

Blood Cysts in Cardiac Valves.—During their investigation of the vascularity of seven human cardiac valves, Dow and Harper observed small dark red nodules on many of the

valve cusps in the hearts of five infants up to 6 months of age. The small dark red nodules projected on the atrial aspects of the cusps a short distance from their edges. They varied in size from 0.2 to 1 mm. in diameter, and the elevations produced were smooth with no external opening visible. The authors support the view of Haushalter and Thiry that blood cysts originate from the blood in the heart cavity that has been pressed into a valve cusp. In embryonic hearts the traction of the chordae tendineae tends to produce furrows or undulations in the delicately meshed fibrous structure which has not yet become differentiated into special layers in the cusp, and this is especially marked on the ventricular aspect. If fusion of the edges of these furrows occurs, there are formed localized blood cysts which become incorporated in the substance of the cusp. On serially sectioning the cusps, fusion of the edges of the furrows was seen to be taking place leading to the formation of tunnels of variable size. As the result of traction and pressure, these become enclosed spaces which may eventually appear as swellings on the atrial aspect of the cusp. Each cyst had a complete endothelial wall surrounding it, and those which presented on the atrial aspect of the cusps acquired an additional layer of atrial endothelium on their projecting surfaces. Blood cysts do not appear to have any pathologic significance and are a common anatomic observation in the valves of the new-born and infants in the first few months of life.

Journal of Mental Science, London

82: 475-700 (Sept.) 1936

The Law and the Present Position of Psychiatry. M. A. Collins.—p. 478.
Manic-Depressive Psychosis: Melancholia: Prognostic Study and Case Material. A. Lewis.—p. 488.
Prognosis of Depressions of Later Life. E. W. Anderson.—p. 559.
Hyperglycemic Index as an Aid to Prognosis. P. K. McCowan.—p. 589.
Chronic Mania. K. Cameron.—p. 592.
Therapeutic Attemps in Manic-Depressive Psychosis. H. Tomasson.—p. 595.
Prolonged Narcosis in Manic-Depressive Psychosis. T. J. Hennelly.—p. 608.
Treatment of Mania. D. N. Parfitt.—p. 615.
Effect of Benzedrine on Depressive States. E. Guttmann.—p. 618.
Inheritance of Manic-Depressive Insanity and Its Relation to Mental Defect. E. Slater.—p. 626.
Mental Deficiency and Manic-Depressive Insanity. A. G. Duncan.—p. 635.
Irritability as Symptom in Manic-Depressive Psychoses. W. Mayer-Gross.—p. 648.
Simple Psychologic Data in Melancholia. A. Guirdham.—p. 649.
Psychopathology and Periodicity: Note. S. M. Coleman.—p. 654.
Contribution to Psychopathology of Mania. I. Skottowe.—p. 656.

Lancet, London

2: 1197-1252 (Nov. 21) 1936

British Dysenteric Infections. A. F. Hurst and F. A. Knott.—p. 1197.
*Optic Atrophy as Presenting Sign in Pernicious Anemia. H. Cohen.—p. 1202.
Uveoparotitis. G. E. Lewis, R. Raines and D. S. Stewart.—p. 1204.
Simultaneous Bilateral Artificial Pneumothorax. M. Myers and T. H. Parkman.—p. 1207.
Acute Phlegmonous Appendicitis Produced by Intravenous Administration of Histamine. H. Selye.—p. 1210.
Bee Venom in Rheumatic Disorders. F. S. Mackenna.—p. 1212.

Optic Atrophy in Pernicious Anemia.—Cohen believes that the lesions caused by loss of function followed by degeneration of nerve elements and their resulting symptoms might precede by a considerable period the clinical manifestations of pernicious anemia, and at first the effects would appear to be temporary and amenable to treatment. But, if left untreated, the pathologic changes progress to irreparable and complete neuronic degeneration. The two cases of optic atrophy presented show that clinical examination cannot determine the proportion of temporary to permanent changes responsible for the visual loss, for the resulting symptoms and signs of the two are identical. It is in this sense that the term "optic atrophy" is applied to the pathologic change responsible for the visual disturbances described, and the cases demonstrate that this type of optic atrophy can precede other neurologic and blood changes in pernicious anemia. The diagnosis of pernicious anemia can be determined by the age of the patient (middle age) at the onset of optic atrophy, the steady deterioration in visual acuity before treatment is commenced and the considerable improvement that immediately follows the adequate parenteral administration of liver extract. Of the many cases of unexplained optic atrophy a few human beings can be spared the tragedy of progressive blindness if an unmasked pernicious anemia is recognized early as the cause of failing vision and adequate treatment given. The knowledge that failing vision due to optic atrophy might be the presenting symptom in pernicious anemia will doubtless facilitate its recognition at an early stage.

South African Medical Journal, Cape Town

10: 719-762 (Nov. 14) 1936

Preventable Mortality and Morbidity in Anesthesia. H. Grant-Whyte.—p. 721.
"Knoppie-Spider" Antivenene. M. H. Finlayson.—p. 735.
Coordination of Effort in Tuberculosis Control in South Africa. D. P. Marais.—p. 736.

Chinese Medical Journal, Peiping

50: 1013-1152 (Aug.) 1936

Serum Electrolytes and Mineral Metabolism in Case of Addison's Disease, with Observations on Use of Suprarenal Cortical Extract (Eschatin). S. K. Chou, K. C. Chen, S. H. Liu and S. S. Fang.—p. 1013.
Tuberculosis of Cervix Uteri. S. Lin.—p. 1025.
Studies on Resistance of Leishman-Donovan Bodies to Various Physical, Chemical and Biologic Agents: Part I. Resistance of Leishman-Donovan Bodies to Certain Physical Agents, Namely, X-Ray, Heating, Chilling and Drying. H. L. Chung.—p. 1039.

50: 1153-1322 (Sept.) 1936

Chronic Myelogenous Leukemia in Association with Lymphosarcomatosis and Transient Diabetes Insipidus. C. S. Yang.—p. 1153.
Treatment of Old Dislocation of Shoulder. C. M. Meng and L. J. Miltner.—p. 1161.
Cesarean Section in Treatment of Placenta Praevia in China: Analysis of 181 Cases. E. Eno.—p. 1173.
Studies on Development of Spirochaeta Recurrentis in Body Louse: Preliminary Report. H. L. Chung and L. C. Feng.—p. 1181.
Studies on Development of Spirochaeta Duttoni in Ornithodorus Moubata: Preliminary Report. L. C. Feng and H. L. Chung.—p. 1185.
*Rhythmic Movements Within Red Blood Corpuscles: Previously Unobserved Phenomenon (Preliminary Report). C. E. Forkner, Lily S. Zia and C. T. Teng.—p. 1191.

Rhythmic Movements Within Red Blood Corpuscles.—Two years ago, while studying a fresh specimen of human blood by means of the supravital technic, Forkner and his co-workers observed that practically all red blood corpuscles exhibited peculiar movements within or on the surface of the cells. The phenomenon has been demonstrated repeatedly. The phenomenon is present in the red corpuscles of normal individuals and in patients suffering from a variety of diseases. It may be seen easily in fresh blood films made by allowing a coverslip, on the surface of which is a fresh drop of blood, to fall on a glass slide, the coverslip then being rimmed with petrolatum. The movements are best seen with an oil immersion lens and a 10× eyepiece in an area at which the cells are not too much compressed. They appear more clearly with binocular vision but are seen also with an ordinary monocular microscope of standard type. Rather intense illumination is necessary. Three types of movements of or within the cells may be observed: (1) a coarse jiggling of the corpuscles, (2) an irregular but more or less constant rate of pulsation of the borders of the corpuscles and (3) an intense, exceedingly rapid and apparently rhythmic activity within the cells themselves. The activity may represent a mechanism of molecular streaming whereby the molecules circulate within the cell at a rapid rate. If this is true, it is a solution for a problem which is of some importance in the physiologic activity of the erythrocyte. The mechanism of rapid oxidation and reduction of hemoglobin within erythrocytes may be intimately related to the very intense and rapid activity within the cells themselves. Such a mechanism would explain at once how erythrocytes are able to act so efficiently.

Japanese Journal of Experimental Medicine, Tokyo

14: 457-534 (Oct. 20) 1936

Immunity Against Syphilis: II. Spirocheticide Capacity of Syphilitic Serum. T. Tani and K. Ōgiuti.—p. 457.
Id.: III. Parabiosis Experiments with Rabbits. T. Tani and S. Aikawa.—p. 465.
Influence of Parenteral Inoculation of Lymph Gland and Other Organ Cell Constituents on Lipase Content of Intestinal Fluid. H. Kato.—p. 483.
In Vitro Culture of Rabies Virus. K. Kanazawa.—p. 519.
Experimental Studies on Lymphogranuloma Inguinale. Y. Satani and J. Sano.—p. 523.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 1447-1530 (Nov. 23) 1936. Partial Index

Fulminating Hemoptyses. R. Even.—p. 1487.
*Pleural Form of Granulitis. R. Even.—p. 1489.
Diagnosis of Kala-Azar by Ganglionic Puncture. P. Giraud, Montus, Sardou and Gaubert.—p. 1493.
Paroxysmal Arterial Hypertension in Case of Permanent Slow Pulse. Costedoat.—p. 1509.

Pleural Form of Miliary Tuberculosis.—Even states that the classic description of a pleural form of miliary tuberculosis credited to Empis is false, since the latter never described the clinical picture quoted and could not have done so since it does not exist. Even describes three cases of this condition and states retrospectively that the condition is probably more common than is generally realized. The condition is observed most frequently in adolescents and young adults. It is characterized clinically sometimes by rapid onset and sometimes by gradual development. There is a proved effect on the general state of the body contrasting markedly with the discrete nature of functional manifestations. The clinical and x-ray signs show a pleural effusion, either unilateral or bilateral and of relatively insignificant nature. Evolution toward death occurs in a few months, which may or may not be hastened by pericardial, peritoneal or meningeal complications. Anatomically the granulations are disposed most commonly on the serosa and the viscera and less in the lungs.

Paris Médical

2: 313-344 (Nov. 7) 1936

Diseases of Children in 1936: Annual Review. P. Lereboullet and F. Saint-Girons.—p. 313.
Normal Diction and Pathologic Diction. Mme. Suzanne Borel-Maisonny. —p. 327.
Pneumothorax of the New-Born. M. Péhu.—p. 335.
*Remarks on Insulin Treatment of Periodic Vomiting Associated with Acetonemia. M. Lelong.—p. 341.

Insulin Treatment of Periodic Vomiting.—Since the effectiveness of insulin in the treatment of diabetic acidosis became well known, it seemed reasonable to attempt its use in periodic vomiting of infancy accompanied by acetonemia. Many contradictory opinions with regard to the rationale of this procedure have been reported, and Lelong briefly reviews some of these opinions. The coincidence of periods of vomiting with a state of acidosis has already been proved. However, this is not accompanied by any other signs of diabetes. Furthermore, there is an initial hypoglycemia, which fact would definitely contraindicate insulin during the initial phase of a vomiting crisis. However, hyperglycemia generally develops secondarily. These facts indicate that insulin should be given only in the prolonged phase of periodic vomiting and that insulin is contraindicated at the onset because of the initial hypoglycemic shock. The technic is not yet standardized. He believes that at present insulin therapy can be considered only as adjuvant to dextrose therapy.

Presse Médicale, Paris

44: 1793-1864 (Nov 14) 1936. Partial Index

Primary Suppurative Cancers of Lung. E. Sergent, R. Kourilsky, Turiaf and Pauchard.—p. 1793.
*Experimental Action of Streptococcic Toxin on Neurovegetative System. P. Gastinel, M. Conte and J. Delarue.—p. 1806.
Gastric Hemorrhages and Their Endoscopic Control. P. Chevallier and F. Moutier.—p. 1814.
*Generalized Osteoplastic Form of Prostatic Cancer Metastases. L. Van Bogaert, G. Van Cauteren and H. J. Scherer.—p. 1816.
*Erythroplasia. A. Touraine and G. Solente.—p. 1830.
Pathogenesis of Cerebral Hemorrhage. J. Lhermitte.—p. 1843.

Action of Streptococcic Toxin on Neurovegetative System.—While recognizing the differences that must exist between the action of streptococcic toxins on the human body and on experimental animals, Gastinel and his co-workers report a study based largely on the guinea-pig. It is difficult to keep an active streptococcic toxin, since its activity is lost rapidly on storage. It is also noteworthy that marked differences of susceptibility exist between individual guinea-pigs. The method employed by the authors was the direct injection of scarlatinal toxin into the sympathetic trunk at various levels. Many were made into the left splanchnic nerve at its subdiaphragmatic emergence. The symptoms subsequently observed could be grouped into an almost uniform scheme. After the injection the animals had a chill, followed five or ten minutes later by urine containing albumin, frequently accompanied by hematuria. The intestines of animals killed a few hours after a concentrated injection contained small amounts of albuminous and bloody mucus. During the subsequent days the animals became emaciated and often about the fourth or fifth day died suddenly if handled. Necropsy showed a striking diffuse red tint in the abdominal cavity. Vasodilatation was marked. Gastric lesions, purpuric spots, hemorrhagic erosions and infarcts were common. Similar pictures were found when other areas of the vegetative system were injected. At first glance these experimental results seem far removed from human scarlatina, but the action of the toxin on the sympathetic nervous system determines symptoms in the animal which are frequently found in scarlet fever and especially in its severe forms. The dominating modification seems to be the manifest electivity of the erythrogenic toxin for the vegetative nervous system.

Prostatic Cancer Metastases.—Van Bogaert and his collaborators report an observation on a 44 year old man characterized clinically by pelvic and juxtapelvic pains coming on by crises, which were especially severe at night. The disease progressed by exacerbations with fever and rapidly affected the general condition, causing anemia and loss of weight. From the biologic point of view there was a normal blood calcium and phosphorus, a low blood lipoid level and a considerable increase in the blood phosphatase. The diagnosis, confirmed by microscopic study, was scirrhous carcinoma of the prostate invading the base of the bladder and causing metastases to all parts of the skeleton. The curious part of the case was the generalized osteoplastic reaction caused by the metastases. The most obvious explanation in the case reported is based on the increased phosphatase of the blood, which attained from eight to ten times its normal volume. The authors concluded that the osteoplastic form of prostatic metastasis is a subacute disease causing a rapid loss of weight and strength and sometimes febrile and painful symptoms. The roentgenograms produced can give rise to some therapeutic difficulty since the osteoplastic form is quite rare.

Erythroplasia.—Erythroplasia has been defined as a chronic disorder characterized by the appearance and persistence of red plaques, not painful or only slightly sensitive, accompanied by a slight infiltration of the exposed mucosa. Touraine and Solente review this subject. Ninety-two observations of the disease have been recorded, fifty-seven of them under the name "erythroplasia." The condition has apparently been observed in nearly all countries. It was found in fifty-eight men and twenty-eight women. It seems mostly to be a disease of the second part of life. In three instances it developed on a scar following trauma. The part played by syphilis seems to be found coexisting. The site of predilection is the genital zone, and the disorder is much rarer in other mucous areas. In the majority of instances it is characterized by a single plaque which develops slowly and insidiously and passes unnoticed until there is a slight local itching. The flat, slightly raised and infiltrated surface of the lesion can usually be readily identified. It develops with extreme slowness first by simple hyperplasia and later by metaplasia. A malignant development always occurs eventually. The treatment of choice is electrocoagulation or the thermocautery. Recurrence must be guarded against.

Pediatria, Naples

44: 1041-1108 (Dec. 1) 1936

*Relation Between Measles and Tuberculosis. N. Carrara.—p. 1041.
Lipoid Therapy and Lipolytic Ferments in Blood Serum. L. Franzi. —p. 1086.
Presence of "Fleming's Lysin" in Human and Other Mammals' Milk. F. Martillotti.—p. 1097.

Relation Between Measles and Tuberculosis.—Carrara made a study of 1,470 children hospitalized in a pediatric clinic in connection with the problem of the relations between measles and tuberculosis. Measles does not predispose the organism to the development of tuberculosis. The rate of stimulation of latent foci and reactivation of healed tuberculous foci is low (11.2 per cent) except in children under the age of 5 years, in whom it is high. Measles has an unfavorable influence on the

evolution of tuberculosis in young children, in children who have had tuberculosis for a short time on development of measles and in children who are suffering from acute tuberculosis, regardless of age. As a rule, acute tuberculosis complicated by measles evolutes toward disseminated miliary tuberculosis or tuberculous meningitis. Stimulation, reactivation and aggravation of tuberculosis in measles is due to dysergia and enanthemic changes of the respiratory tract in the course of measles. Reactivation and reaggravation of tuberculosis take place within a period no longer than a year after measles. Any late change in the evolution of the former cannot be related to the latter. The reactivation of tuberculosis following measles can be prevented by administering serum from convalescents. The latter is especially indicated in all children with secondary allergy or sensitivity to tuberculosis as well as in children exposed to a reinfection and in those under the age of 5 years.

Prensa Médica Argentina, Buenos Aires

23: 2767-2814 (Dec. 16) 1936

Local Anesthesia in Appendectomy: Results in Two Thousand Operations. R. A. Marotta and F. M. Bustos.—p. 2767.
Hermaphroditism: Cases. O. L. Bottaro and O. E. Arrillaga.—p. 2771.
*Vaginal Trichomoniasis. E. Nicholson nad A. G. Peralta Ramos Jr. —p. 2782.
Syndrome of Radicular Neuritis with Albuminocytologic Dissociation in Cerebrospinal Fluid (Guillain-Barre); Sequel of Left Cubital Neuritis; Associated Extrapyramidal Symptoms: Case. B. B. Spota and A. J. Alurralde.—p. 2787.
Lithiasis of Common Bile Duct: Clinical and Therapeutic Study. V. Suarez.—p. 2791.
Gonococcic Filtrate ("Gonofil") in Treatment of Gonorrhea. A. Garfunkel and J. C. Aranibar Uriburu.—p. 2800.

Vaginal Trichomoniasis.—Nicholson and Peralta Ramos state that Trichomonas vaginalis plays an important part in the etiology of persistent refractory vaginal discharge. Trichomoniasis is frequent. The authors found it in 31 per cent of the cases examined in a gynecologic clinic in which the patients suffered from persistent vaginal discharge. It is more frequent in colored than in white women, especially in those who do not follow hygienic habits. The infection may be acquired by contagion in public baths in stagnant water and by using personal belongings of patients suffering from the infection. The authors failed to find any case acquired through sexual relations. Trichomoniasis should be considered a nosologic entity, as it gives a definite pathologic picture, and the phenomena developed in the course of the infection are characteristic of the latter. For diagnostic purposes the authors used the fresh drop method, in which the drop is stained with a saturated solution of brilliant cresyl blue in a physiologic solution. In six groups of patients the authors used the following methods of treatment: (1) painting of the vagina with a 5 per cent solution of mercurochrome every other day and later on every third day, (2) embrocations of petrolatum with quinine sulfate every other day, (3) daily douches with a 1:1,000 solution of mercury bichloride followed by an application of a 5 per cent solution of borated glycerin every other day, (4) a daily alkaline douche and two tablets of chiniofon (taken deep in the vagina by the patient), (5) two or three pills daily of an arsenic derivative and (6) daily vaginal painting with a 1:1,000 solution of mercury bichloride followed by an application of a 5 per cent solution of borated glycerin. Complete cure was obtained in all cases in from thirty to ninety days. The most resistant types are cystic trichomonal infections. The treatments with mercury bichloride and the arsenical preparation gave the most rapid and satisfactory results with permanent cure of the infection.

Rev. de Parasitologia, Clinica y Laboratorio, Havana

2: 561-657 (July-Aug.) 1936. Partial Index

Interpretation of Dilution Test of Renal Function. G. González.—p. 585.
Intestinal Parasitism in Natives of Tiscornia Village. J. M. Bolaños, P. Kouri and V. Anido.—p. 601.
*Lambliasis: Importance and Treatment. J. Echemendia.—p. 611.
Gastro-Enteropathy Due to Plasmodium Praecox: Cases. G. A. Jiménez and M. Benavides.—p. 621.
Hymenolepis Diminuta in Human Beings: Case. J. Fermoselle Bacardi and A. Portuondo del Pino.—p. 629.

Treatment of Lambliasis.—Echemendia considers lambliasis of importance, especially because of the digestive and general disturbances it causes. In many cases the digestive disturbances are etiologically misinterpreted and an erroneous treatment is given. The clinical picture consists of intestinal dyspepsia associated with enteritis and mucomembranous enterocolitis or rectocolitis, which frequently are of a dysenteriform type. There are pneumatosis, colicky pains and sometimes infection of the biliary tract. Identifying the parasite in the feces, after administration of a cholagogic saline purgative, or in the mucus of the duodenal secretion obtained by catheterization during stimulation of the gallbladder, is of importance. Lambliasis is a stubborn infection from a therapeutic point of view. The author reports satisfactory results from the administration of hydrochloric acid to adults and lactic acid to children, alternating with the parasiticide treatment. The latter consists in the administration of trivalent or pentavalent arsenicals for adults, chiniofon for children and an iodine-quinoline preparation in intolerant cases due to liver insufficiency. As a rule, four or five alternate acid and parasiticide treatments are required to control the infection. Discontinuation of the treatments is determined by negative results of coprologic examinations obtained on three consecutive examinations. The author is experimenting with some other parasiticides, the use of which is too recent to permit conclusions. According to the author, lambliasis should be given especial attention in the zone of Chaparra, because many cases of gastroduodenal disturbances in children of that region originate in lambliasis.

2: 659-752 (Sept.-Oct.) 1936. Partial Index

Tuberculous Otitis Media Secondarily Infected: Case with Recovery. V. C. Cabrera Calderín.—p. 685.
*Ileocecocolic Intussusception Associated with Peritonitis from Ascaridiasis and Trichocephalosis: Case. F. Sala Penisello, J. A. Jiménez and A. Guernica.—p. 693.
Sellek-Frade Meinicke Modified Test Compared to Müller Conglobation Second Test in Congenital Syphilis in Children. A. Sellek Azzi and A. del Frade.—p. 705.
Diphtheritic Prostatitis: Case. M. Segurola Alberdi and A. Curbelo Hernández.—p. 725.

Intussusception from Ascaridiasis and Trichocephalosis.—Sala Penisello and his collaborators say that the ileocecal is the most frequent type of pathologic intussusception. Ileocecocolic intussusception is rare. The authors' patient, aged 2, showed a grave clinical picture, consisting of colic pain, colic disturbances and symptoms of acute appendicitis. Necropsy revealed peritonitis and ileocecocolic intussusception caused by ascaridiasis and trichocephalosis. The authors say that ascaridiasis alone or in association with trichocephalosis may produce colic disturbances and grave symptoms of acute appendicitis in children. It is necessary, therefore, to make fecal examinations as soon as the symptoms appear. In children suffering from intestinal parasitism it is found that 6.57 per cent is caused by ascarids, 52.74 per cent by Trichocephalus and 14.12 per cent by both parasites. In the authors' case the formation of eosinophils at the site of intussusception was verified by the study of histologic preparations. According to the authors, intussusception depends on a local factor which simultaneously stimulates peristalsis and antiperistalsis in two contiguous intestinal segments of different calibers. They believe that ileocecocolic intussusception in their case originated in associated alterations of antiperistalsis of the large intestine and peristalsis of the small intestine due to chronic inflammation of the enterocolic muscular layer.

Klinische Wochenschrift, Berlin

15: 1865-1904 (Dec. 19) 1936. Partial Index

*Clinical and Epidemiologic Significance of Types of Diphtheria Bacillus. M. Gundel.—p. 1871.
Antibodies Against Lipoid Hormones. R. Brandt and Helene Goldhammer.—p. 1875.
*Central Position of Liver in Purine Metabolism and Its Significance for Pathogenesis of Gout. F. Chrometzka.—p. 1877.
Problem of Agranulocytosis After Medication with Aminopyrine. W. Rüther.—p. 1881.
Wheat Germ Oil (Vitamin E) in Treatment of Habitual Abortion. P. Vogt-Möller.—p. 1883.
Vitamin C in Therapy of Whooping Cough. T. Otani.—p. 1884.

Significance of Types of Diphtheria Bacillus.—Gundel examined approximately 10,000 strains of diphtheria bacilli (from 2,058 patients) in order to determine the type and its relation to the clinical and epidemiologic aspects. In 954 of

the 2,058 cases he was able to obtain information about the clinical course. A tabular report of the relationship between the type of bacillus and the clinical course indicates that in the district in which the author's studies were made 46 per cent of the cases with the grave type of the diphtheria bacillus took a mild course. In the mild and intermediate type of cases the mild forms of diphtheria amounted to 57 and 50 per cent, respectively. Of the cases with the grave type thirteen took a severe course compared to 5 per cent in the mild type and 6 per cent in the intermediate type. However, in sixty diphtheria fatalities, fifty-four cases were found to have the grave type of diphtheria bacillus and the remaining ones the intermediate type, the mild type being found in none of the fatal cases. The type differentiation has no therapeutic significance. It would be useless to give larger doses of serum in case of infection with the grave type than in the others. The decisive factor in the treatment is the time of administration of the serum. The frequency of the three types of diphtheria bacilli differs in different years and regions. With increasing duration of an epidemic, which frequently begins with one type, other types may appear and change the epidemiologic picture. There is no difference in the epidemiologic significance of the various types as regards the bacillus carrier, the ratio of grave to mild types being about the same in bacillus carriers as in diphtheria patients. The types of diphtheria bacillus are characterized by a high degree of constancy. If a different type appears in a patient, it is not the result of a change in type but rather of the new invasion of another type.

Liver in Pathogenesis of Gout.—Chrometzka discusses the various theories on the pathogenesis of gout. On account of the central position of the liver in the purine metabolism, he investigated how this metabolism would be changed following experimental impairment of the liver by the intravenous injection of india ink. By systematic injection for long periods, it proved possible to produce a fat cirrhosis of the liver in animals. In proportion to the impairment of the liver, the purine metabolism became impaired in that the animals gradually lost the capacity to oxidize uric acid. Necropsy revealed as the cause of this severe metabolic disturbance not only a cirrhosis of the liver but also a cirrhosis of the spleen and the adrenals, numerous uric acid concrements in the renal pelvis and uric acid needles in the punctate of a shoulder joint. After a detailed description of the histologic aspects, the author discusses the problem whether disturbances of the purine metabolism can be observed in hepatic diseases of human subjects and whether anatomic or functional disturbances of the liver can be demonstrated in persons with gout. He gives affirmative answers to both questions.

Medizinische Welt, Berlin

10: 1793-1828 (Dec. 12) 1936. Partial Index

Disturbances of Function of Adrenal Cortex and Their Treatment. S. Thaddea.—p. 1793.
Metabolic Actions and Dietetic Treatment of Nontuberculous Pulmonary Disturbances. E. Grafe.—p. 1797.
Appendicitis and Blood Picture. K. H. Lange.—p. 1801.
*Koilonychia (Spoon Nails). H. Rosegger.—p. 1803.
Criticism of Pneumothorax Therapy of Pulmonary Tuberculosis. F. Koester.—p. 1805.
*Reflex of Differential Diagnostic Significance in Delirum Tremens. H. Schabelitz.—p. 1808.

Spoon Nails.—Rosegger shows that koilonychia (spoon nails) gained diagnostic importance when several authors called attention to the fact that this disorder concurs with a certain type of anemia; namely, achylic chloranemia. The abnormally concave nails appear contracted in the center and the edges are more or less turned up. The free edge of the nail is often extremely sharp, corresponding to the general thinning of the nail. Occasionally the free edge appears as if gnawed on. The usually lusterless spoon nails have a tendency to spontaneous tearing or lamellar splitting. These ungual changes do not always involve all the nails. Moreover there are milder degrees of koilonychia that are hardly perceptible to the eye and can only be felt, the nails being unusually flat (platonychia). In discussing the pathogenesis of koilonychia the author differentiates between exogenic and endogenic causes. The exogenic factors predominate in koilonychias that develop in persons whose hands are for long periods in hot soap suds and other cleansing fluids. Apparently the alkalis of the hot washing fluids cause a swelling and defatting of the nail, and particles of the chemical remain under the rim of the nails. The mechanical factor involved in the washing process may likewise play a part, but the author thinks that individual predisposition is also a factor. In the further discussion of the exogenic causal factors he mentions the occurrence of spoon nails in persons whose hands are in frequent contact with oils, creosotes and cresols or in workers with coal. That exposure of the nails to acids or continuous wetting may play a part is proved by the occurrence of spoon nails in occupations that involve such exposures. As purely endogenic forms of koilonychia the author mentions their development in achylic chloranemia and certain cases of familial occurrence. The therapy of koilonychia varies according to the pathogenesis. In the occupational types, prophylactic measures are important. In the type that occurs in anemia, medication with iron is advisable.

Differential Diagnosis of Delirium Tremens.—Schabelitz points out that in case of delirium it may prove difficult to determine whether an infectious fever, abuse of alcohol or an endogenic psychosis is the cause. He directs attention to a reflex by which delirium tremens cases can be identified. This reflex was first described by Tramer in 1928. The author searched for this reflex in all patients (over a thousand cases) who were admitted to the institute for mental disorders with which he is connected. Tramer's reflex was elicitable almost exclusively in patients with delirium tremens, but in these it was observable again and again. The reflex is elicited by a blow of the reflex hammer on the ball of the foot. If the blow results in a single quick dorsal flexion of the foot, the reflex is positive. The most suitable position for the elicitation of the reflex is one intermediate between dorsal and plantar flexion and between internal and external rotation. Extremely flexed position or tension in the musculature of the leg prevents the reflex. The author observed that Tramer's reflex appeared in the majority of cases on the second day after the outbreak of delirium tremens and usually outlasted the so-called terminal sleep for hours or days. He never was able to elicit it within the first twenty-four hours.

Klinicheskaya Meditsina, Moscow

14: 1727-1890 (No. 12) 1936. Partial Index

Nosology of General Neuroses. V. K. Khorokhko.—p. 1727.
Work Hypertrophy Theory of the Heart. N. A. Podkaminskiy.—p. 1748.
*Chronic Nephritis. N. L. Vilk and N. P. Rabinovich.—p. 1767.
*Treatment of Sepsis with Incompatible Blood. A. N. Spiridonov.—p. 1798.
Carbohydrate Metabolism in Pneumonia. V. V. Akkerman and M. A. Naryshkina.—p. 1803.
Prophylaxis of Measles. P. A. Byreev.—p. 1809.
Mesoglia Reaction in Comatose Forms of Malaria. M. B. Svyatukhin.—p. 1815.

Chronic Nephritis.—Vilk and Rabinovich report clinical observations on 100 cases of chronic nephritis over a period of from six to eight years. A careful analysis of the histories enabled them to establish that in fifty-five there had been an acute nephritis. In one third of the total no suspicion of acute nephritis in the past could be entertained. This type of nephritis gives a less favorable prognosis than those which follow an acute nephritis. Cases of chronic nephritis are not infrequently diagnosed as such late in the course of the disease. A considerable number of them are admitted for the first time with definite symptoms of uremia. The more prominent symptoms in the clinical picture are those of the cardiovascular system, such as insufficiency of the mitral or the aortic valves, cardiac asthma and attacks of stenocardia. Thirteen patients presented a picture that differed from the rest. These cases developed on the basis of an acute nephritis and rapidly progressed to invalidism and death. The recurring edema and high albumin content of the urine, lipoiduria, hypo-albuminemia and marked cholesterolemia of these cases presented a similarity to lipoid nephrosis. However, the presence of hematuria and a tendency to high blood pressure established that the basic process was a glomerulonephritis. The duration of life from the onset of acute nephritis in this group was from three to three and one-half years. The duration of chronic nephritis varies and may persist for decades.

Treatment of Sepsis with Incompatible Blood.—Spiridonov treated twenty-six cases of generalized sepsis with transfusion of incompatible blood. Sixteen patients presented

sepsis with metastatic pyemic foci, while ten patients presented a picture of sepsis without localization. Of the latter group seven died and three recovered; of the former, one died and fifteen recovered. Necropsies of the eight fatal cases revealed that all belonged to the irreversible type of sepsis which does not recover under any form of treatment. The beneficial effect of small blood transfusions suggested that the effect was that of stimulation rather than of substitution of the blood volume. The author believes that the stimulating effect is related to the phenomenon of colloidoclasis. He therefore resorted to the use of incompatible blood because it makes the phenomenon of colloidoclasis more pronounced. The maximal dose was 30 cc., introduced once in five days. The maximal dose for heterogenous (goat) blood was 6 cc. The reaction, which took place from one and one-half to two minutes after infusion, was characterized by redness of the face followed by pallor and moderate cyanosis of the face and lips, sweating of the forehead, pains in the back and in the extremities and increased respiration, accompanied sometimes by coughing and occasionally by vomiting and by acceleration of the pulse (from 120 to 130 a minute). This reaction was followed from ten to fifteen minutes later by a chill and a rise of temperature. The reaction reached its height in from one to one and a half hours and gradually subsided in about six hours. Four of the fatal cases failed to react. The author demonstrated that hemolysis begins as early as five minutes after the transfusion and lasts for from twenty to twenty-five minutes. The mortality rate of 30 per cent is quite low for this type of sepsis. Transfusions of compatible blood were practiced in the course of the treatment in order to check the developing anemia.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

80: 5713-5764 (Dec. 26) 1936. Partial Index

Polycythemia Rubra. W. A. Boekelman.—p. 5717.
*Irregularities of Pulse in Pulmonary Tumors. A. W. C. G. Kamerling and C. L. C van Nieuwenhuizen.—p. 5726.
Changes in Moods and Psychoses in Women Connected with Elimination of Hormones. A. M. Meerloo.—p. 5730.

Irregularities of Pulse in Pulmonary Tumors.—Among thirty-six patients with pulmonary tumors, Kamerling and van Nieuwenhuizen found eight with irregularities of the pulse. Auricular fibrillation was observed in six, paroxysmal sinus tachycardia in one and paroxysmal ventricular tachycardia in another. Since these irregularities sometimes occur as the first symptom of bronchial carcinoma, they are of a diagnostic and prognostic importance. In accordance with the observations of other investigators on the origin of paroxysmal tachycardia in animal experiments and in man, the authors regard vasal and sympathetic irritation as the cause of the symptom in patients with pulmonary tumors. Distinct signs of sympathetic stimulation (exophthalmos and dilated pupils) were found in some cases and necropsy disclosed a damaged vagus nerve in a few instances. These observations afford clinical confirmation of the extracardiac genesis of a number of arrhythmias found experimentally.

Acta Medica Scandinavica, Stockholm

90: 405-603 (Dec. 19) 1936. Partial Index

Clinical Contribution to Knowledge on Morbus Wilson-Westphal-Strümpell (Hepatolenticular Degeneration). R. Lemming.—p. 405.
*Changed Physical Properties of Plasma Proteins in Nephrosis. M. C. Ehrström.—p. 427.
Gastric Cancer and Pernicious Anemia in Same Patient. I. Vartiainen.—p. 445.
*Influence of Body Posture on Heart Minute Volume. H. E. Nielsen.—p. 456.
*Uremia Due to Dehydration. L. Meyler.—p. 475.
Sugar Output of Liver Under Normal Conditions. H. Heller.—p. 489.
Bone Marrow in Hemolytic Icterus, with a Contribution to Question of Nature of Megaloblasts. G. Tötterman.—p. 527.

Plasma Proteins in Nephrosis.—Ehrström shows that, if an aqueous solution of congo red is shaken with carbon and centrifugated or filtered, total discoloration takes place; but if a plasma is colored with congo red in vivo or in vitro, it cannot be discolored in the aforementioned manner. To be sure, there is some discoloration and the various plasmas behave in different ways. Plasma from persons with normal kidneys, which is free from protein changes and which has been colored in vivo, loses 20 per cent of the coloring matter, and, if colored in vitro, loses 8 per cent of its coloring matter. In contradistinction to this, the plasma of patients with various nephropathies and more or less severe albuminuria loses 37 and 57 per cent, respectively, of the coloring matter. If the globulin fraction is withdrawn from the plasma, the discoloration tendency still differs and is even more pronounced than in the whole plasma, the discoloration amounting to from 40 to 55 per cent in persons with normal kidneys and to from 60 to 100 per cent in patients with nephropathies. The degree of discoloration is not dependent on the quantitative ratio of the plasma proteins, the withdrawal of the globulin, the albumin: globulin quotient, the cholesterol content, the rest nitrogen, the morphologic composition of the blood, the sedimentation reaction or the tendency to edema. The coloring matter that is excreted in the urine after intravenous administration is bound to the urinary protein. The discoloration of the plasma is not proportionate to the degree of albuminuria. The increased discoloration (reduced absorption capacity) of the plasma of patients with severe albuminuria explains why the intravenous congo red test (according to the method of Bennhold) is positive in these cases in spite of the slight elimination of the coloring matter in the urine. In some cases the discoloration of the plasma in vitro may be increased in spite of the fact that the intravenous congo red test gives normal values.

Influence of Body Posture on Heart Minute Volume.—In a number of postural experiments, Nielsen watched the behavior of the circulation. He found that in healthy persons the minute volume of the heart is approximately 10 per cent larger in the recumbent than in the sitting position. The corresponding beat volume was 20 per cent larger. In tests on three patients with heart disease, the minute volumes were on the average 20 per cent larger in the recumbent than in the sitting position. On the basis of these results the author considers it probable that the aforementioned changes in the cardiac minute volume during postural changes may play a part in the development of orthopnea and of cardiac asthma.

Uremia Due to Dehydration.—Meyler demonstrates that an extrarenal uremia may develop as the result of dehydration. This form of uremia arises because dehydration leads to toxic protein destruction. The nitrogenous end products cannot be excreted sufficiently because there is a more or less marked oliguria and because the renal function is impaired under the influence of the lack of fluid and of the hypotension. The author describes several cases of uremia due to dehydration which could be cured by abundant supply of fluid. Under the influence of this large fluid intake the toxic protein destruction disappears, the diuresis increases and the renal function improves. The improvement of the renal function manifests itself by an increase in the maximal concentration. When the sodium chloride content of the blood had increased the author generally used a 5 per cent dextrose solution for subcutaneous administration. When the sodium chloride is at a normal level or slightly increased, it is better to use physiologic solution of sodium chloride. If dextrose solution is given in these cases the dilution of the blood may cause a fall in the sodium chloride content, which may have a harmful effect. A case is described of a male subject who was extremely dehydrated as the result of diabetic polyuria. This case shows great resemblance to the experiments of the Mackays, who made rabbits uremic by producing extreme dehydration with injections of dextrose solution. In gastric hemorrhage this form of uremia will develop because loss of blood means loss of fluid, and sometimes, in a severe gastric hemorrhage, no supply of fluid is allowed for days. Moreover, it is emphasized that in uremia due to lack of salt there is always a marked dehydration, which plays an important part in producing uremia. Lack of salt leads to protein destruction. Dehydration has the same effect; moreover, it causes oliguria. These factors together lead to uremia.

CORRECTION

Riboflavin Instead of Acriflavine.—In the abstract of the article by Verzár and Laszt (*Nature* 138:844 [Nov. 14] 1936) in THE JOURNAL, January 23, page 338, "acriflavine hydrochloride" should read "riboflavin" (or "lactoflavine"), and "acriflavine phosphoric acid" should read "riboflavin phosphoric acid." This error arose through the use by the authors of the term "flavin," which word, spelled with a final e, has long been represented in medical literature as a synonym for the antiseptic acriflavine.